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THE MONIST

THE ETHICAL SIGNIFICANCE OF TIME.

BENSON, in his *Life* of Edward Fitzgerald, says of the author of Omar Khayyam: "He was often face to face with the mystery that there is really no such thing as the present; the future beckons at first far off, then near; then even in the swift passage of thought, when a man says of a sweet moment, 'It is here,' it is numbered with the past."

There is no word which makes a greater impression upon our imagination than the word time. Voltaire propounded in riddle form some of its mysteries.

"What is it which is at once the longest and the shortest thing in the world? the swiftest and the slowest? most divisible and most extensive? most neglected and most regretted? without which nothing can be done? which consumes everything that is small and gives life to everything that is great?

"It is time. Nothing is longer, since it is the measure of eternity; nothing is briefer, since time is necessary for all we think; nothing is slower for him who waits; nothing quicker in pleasure. Time extends to the infinitely great; it comprehends the infinitely small; all men neglect it, and all men regret the loss of it; nothing happens without it; it covers with oblivion that which is unworthy of posterity, and immortalizes the great things of life."

There is no other idea which holds a greater place in our thoughts, for there is no order of facts in which time is not a factor. Ought we not, therefore, to regard time as one of the great forces of nature—the greatest, perhaps,

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since nothing is made without it and nothing can withstand it? Time is the indispensable condition of all evolution, of all development, of all progress. Everything which we see is the work of time, and of all the things that are there is not one which time does not sooner or later destroy—in the social order as well as in the material world.

The slow hand of time levels the mountains and fills up the seas. What is a year, a decade, a millennium to the earth, which takes a million years to lay down a bed of chalk? Sir Walter Raleigh's famous apostrophe to Death were as true an apostrophe to time: "O eloquent and just and mightie Time! whom none can advise, thou hast persuaded; what none hath dared, thou hast done; and whom all the world flattered, thou only hast cast out of the world and despised. Thou hast drawn together all the far-stretched greatness, all the pride, cruelty and ambition of man, and covered it all over with this narrow word—*Finis.*"

Fifty years ago man's past was supposed to include less than six thousand years. To-day the beginning of the race are traced back for hundreds of thousands of years. The so-called ancient history of Egypt and Mesopotamia is modern compared with the earliest chapters of mankind's history. And yet, although we know that early man was a contemporary of the mammoth and "a function of the ice-age," as the late Henry Adams has put it, nevertheless, enormously long as the stem of the race may seem, compared with the first appearance of organic life upon the earth, man is among the youngest of terrestrial phenomena. For if organic terrestrial life were but twenty-four hours old, the human race would have appeared only within the last six seconds.

The idea of time has ever appealed to philosophers and poets of all ages and all tongues. From remote antiquity poets have personified and apostrophized time. Religions have adored it as a potent divinity. Time is the condition

of production of all phenomena without exception, even of thought. It is the coefficient of everything that is. Renan said: "Time seems to me more and more to be the universal factor, the eternal coefficient of creation." To say that a thing becomes, is to say that it is within a certain time.

Each fact that is produced at a given time is closely linked with all other simultaneous or previous facts. It is the issue of all the past and it conditions all the future. Nothing can happen save upon condition of not only being accompanied, but being preceded and prepared by a more or less long succession of other phenomena. Time is necessary for the accomplishment of mechanical actions; for chemical combinations; for the temperature to rise or fall. The fruits of the earth require time to ripen. Young animals require time to grow. Even thought, the most instantaneous thing of which we can think, takes time to mature. The law of time rules all the events of our life, physical, intellectual, moral; and in the degree in which we have direct and immediate knowledge of facts we establish relations of contemporaneity, of priority, of posteriority which unite them. Perception of relations is the origin of our idea of time.

The physical sciences have to deal with the influence of both space and time upon phenomena. For movement, change, is a relation of them together in the material world. The moral sciences, on the other hand, have only to deal with the factor of time. The facts of knowledge have between them relations of time, but not of extent. They appear in a settled order, but there is no motion attached to their change or alternation. Time is the factor in each and all of them. Time conditions them, not space. Every given fact of knowledge lies between certain anterior facts of knowledge and certain posterior facts of knowledge—between a "fore-knowledge" and an "after-knowledge," and between these two there is no interval, no void.

Every moral fact is born out of a temporal environment, so to speak. Every material fact is born in a spatial environment. When we think of it, time has a certain inalienable majesty pertaining to it. Is not my past knowledge still present with me? and is not my past knowledge as much a part of myself as my present knowledge? The future is an hypothesis, and all the past before the beginning of my knowledge is an hypothesis. Yet, even though the "before me" and the "after me" are inferences, between them is the present time in which I am I.

Time is an inseparable concomitant of all our perceptions. All perception represents a certain quality and a certain degree of intensity. Perception is due to the distinction which we make between phenomena. Every act of knowledge implies differentiation, i. e., comparison. We are not conscious of the pressure of the atmosphere, or of the rotation of the earth, for the reason that their action is constant. Our senses are unable to perceive any differences or variations. It has been ingeniously demonstrated that if, for some reason, the resistance of the ether were changed, or the rise and fall of the tides altered, or the rotation of the earth accelerated or retarded, all our conclusions with reference to time would be upset. Only a great poet, by that sixth sense of divination which is the gift of the gods to poets, can apprehend what we dull clods are not able to divine, as when Moody writes:

> "This earth is not the steadfast place
> We landsmen build upon;
> From deep to deep she varies pace,
> And while she comes is gone."

Perception is establishing degrees of difference—*nil sentitur nisi quantum*—and terms of comparison are always directly or indirectly borrowed from our past experience. Therefore time is the real coefficient. Things

are large or small, heavy or light, cold or hot. We never have a single perception; everything is relative.

This relativity is no less evident in our moral life. In our feelings there are both quantitative and qualitative differences of intensity, and one of the chief conditions in these differences, as Aristotle long ago pointed out, is *duration*. Pleasure and pain affect us wholly differently, according as they last for but a moment or endure. The prolongation or the repetition of pleasure increases the charm of it; but too much of even a good thing brings satiety and indifference, even repugnance. The key to the sentiment is time.

On the other hand, time moderates grief and softens disappointment. Griefs which we revisit in memory do not increase our original sense of pain or loss. All of us are more or less incapable of sustaining a continuous tension. Things of every kind impinge upon our minds, and in proportion as our attention is diverted the tension relaxes. Pascal has described in unforgettable language the power of occupation to assuage grief. Charles Lamb showed it by example.

We often hear the saying: "Times have changed." But the different sectors of time are absolutely identical. Time changes nothing, but things change with time. For nothing in nature is immutable, neither feelings nor material things, neither emotions nor realities. The great verity at the bottom of Buddhism is the impermanence of everything. "All things flow," said Heraclitus; "a man does not bathe twice in the same river."

The truth is that the innumerable facts which succeed one another with bewildering diversity arouse new impressions in us, and under their influence and during their duration *we* change, not time. We are never the same. Sometimes we change or are changed greatly and suddenly; more often we change slowly and gradually, so im-

perceptibly that it requires a crisis or a lapse of years for us to perceive the difference.

Time possesses no quality in itself. It does not vary in pace or intensity. It cannot of itself cause either pleasure or pain. Does time really then exist? Has it a separate, distinct quality independently of what we make of it? All bodies revolve in space, all phenomena are produced in time. Time and space are the first verities. They are called self-evident. But are they? Time is not an entity, nor even a quality. It is neither long nor short; slow nor fast, except as we make it so. Is time not then a formal element of knowledge?—i. e., not an objective reality, but only the subjective way in which we recognize realities which in themselves are non-temporal?

Morally speaking, time maintains an absolute neutrality toward us. It has no value except as we employ it. It is indifferent to good or evil. Yet it is a supreme factor in our lives. We are born at a certain time. Our life is made up of a series of longer or shorter events which necessarily terminate at last, i. e., in time. It is impossible to modify the course of time, to arrest it, to hasten it, to retard it, to return upon our path and recover time which has been lost.

"What's time?" Browning makes one of the characters in *A Grammarian's Funeral* exclaim. "Leave 'Now' for dogs and apes. Man has forever." But has he? What is immortality? Is there immortality? "Time will tell," the old saying goes. Will time tell us the answer to this question? How can the answer be proved until time shall be no more? How can immortality be proved until the end of time is reached? And when time shall be no more, will there not be an end to immortality, too?

What do we mean by losing time. To a wise man waste of time is not merely an irritation; it may have almost the proportions of a tragedy. Matthew Arnold,

poet, critic and philosopher that he was, wrote out of the depths of experience when he penned these words: "Give any man all the time that he now wastes, not only on his vices (when he has them), but on useless business, wearisome or deteriorating amusements, trivial letter-writing, random reading, and he will have plenty of time for culture. *Die Zeit ist unendlich lang*, says Goethe; and so it really is. Some of us waste all of it, most of us waste much of it, but all of us waste some."

Economics teaches us that labor is not the only essential to success. One must work at the right time. The operations of agriculture illustrate this. Homer describes the Greek chieftains as grown wise through time. Even so. The wise man takes the counsel of the years against the moment, and the wisdom of the centuries against the years.

What we call "progress" is really intelligent valuation of time, not only the present and the future, but the past also. For the nation which despises tradition, which rejects the cumulated heritage of the race is going backward. Ruskin has put this thought in very beautiful form: "You allow it is wrong to waste time," he argues, "that is, your own time; but then it must be still more wrong to waste other people's time, for you have some right to your own time, but none to theirs. Well then, if it is wrong to waste the time of the living, it must be still more wrong to waste the time of the dead; for the living can redeem their time, the dead cannot. But you waste the best of the time of the dead when you destroy the works they have left you, for to those works they gave the best of their time....God has lent us the earth for our life; it is a great entail. It belongs as much to those who are to come after us....as to us, and we have no right by anything that we do or neglect, to involve them in unnecessary penalties or deprive them of benefits which it was in our power to bequeath."

Time has no material guise. It cannot be perceived.

It has not the quality of objects. Scientifically it is a quantity, a duration. In other words, time is not absolute. The idea is wholly relative. To say that time is either long or short means nothing, for it depends upon comparison, upon the criterion of measurement. What is a day? Is it 24×60 minutes? Is it $\frac{1}{365}$ of a year? The same interval of time may seem long to one person and short to another because the standard of measurement is a personal equation and varies according to the feelings or the interest of each individual.

When we speak of "an interval of time," what do we mean? Mathematicians have shown that we have no direct intuition of the equality of two intervals of time. We cannot perceive the difference, and have to depend upon instruments of precision to inform us. When we compare some events of our life with other events, each has a different quality. There are a certain number which, for one reason or another, have a preponderant importance. These serve as terms of comparison. They are the mile-posts along the road we are traveling; but unlike highway markings, they are not all equally far apart.

Philosophers and scientists have demonstrated with great power and imagination that for beings whose life is much longer or much shorter than ours, time moves at a very different pace. Dwellers on Saturn and the Martians —if there be any—must have appreciations of time very different from ours.

William James pointed out that if we were creatures capable of noting distinctly ten thousand events in a second, instead of ten, and if our life was made up of the same number of impressions, it would be a thousand times briefer. We would live less than a month and personally know nothing of the change of the seasons. If we were born in winter, we should think of summer as we now think of the terrible heat of the carboniferous age. The

operations of nature would be so slow to our senses that they would be inferred, not perceived. The sun would hang stationary in the sky. The moon would seem almost changeless. On the other hand, if we assume the hypothesis of a creature able to experience only a thousandth part of the sensations which we have within a given time, summers and winters to such a person would be like quarters of an hour. The grass and the flowers would grow so quickly that they would seem instantaneous creations. The movements of animals would be as invisible to him as the flight of a cannon-ball is to us. The sun would traverse the sky like a meteor, leaving behind a diaphanous trail of fire.

Janet has very ingeniously shown that we have very unequal estimations of the same period of time, according as to whether it is in the past or in the future, according to whether we are young or old. When we mentally review the happy and the unhappy episodes of our life, the events in which we have been actors, or which we have witnessed, the years are far from having an equal value in our eyes. The phrases "lately" and "long ago," which have a profound significance from the subjective point of view, have no objective sense. Sometimes we apply the former word to remote events, the latter to events which really are not far removed.

Our observation of the heavens is not easy in all climates nor at all times; nor can we measure short intervals of time from watching the sky. Accordingly instruments have been invented like hour-glasses, water-clocks, balance and spring clocks, to produce regular movements which indicate exactly short divisions of time. The stop-watch will measure a fraction of a second. But let us not be deceived. The indications afforded by these instruments are nothing but signs; they have no significance or value except as these indicia awaken a thought or emotion within

us. What is a day? an hour? a minute? Words! words! There are no two moments of our existence when they say the same thing. There are no two persons who understand them in the same way. "Time travels in divers paces with diverse persons. I'll tell you who Time ambles withal, who Time trots withal, who Time gallops withal, and who he stands still withal." (Shakespeare, *As You Like It,* III, 2.) An hour is insufferably long when we are forced to listen to a dry sermon; it flies on the wings of the wind to lovers.

Nothing more modifies our sense of the lapse of time than our thoughts, our feelings, our interest. Patience is a complex virtue, one only fully possessed by philosophers. Romantic writers sometimes praise the patience of the lowly, like the peasantry in many parts of Europe, and of Orientals. But theirs is not patience, it is mental immobility which comes from poverty of ideas or imagination; from the fact that their intellectual life is so poor that a single idea or impression fills their mind to the brim. The "brooding thought" of the East is chiefly lack of thought; its "patient, deep disdain" largely lack of imagination. Time means nothing in the Orient. It is everything in the West, for the reason that the Western mind is Aristotelian, inquisitive, alert, inquiring.

Ennui is a curious mental phenomenon when it is analyzed. It is not a positive, but a negative state of mind. It has, so to speak, not a cause, but a non-cause. There are two sorts of people who are never bored—those who have enough ideas and imagination to be sufficient unto themselves, who are possessed of

> "that inward eye
> Which is the bliss of solitude,"

and those who are so light-minded that every trivial thing amuses them.

Time and space are each measureless. But for the poet and the philosopher the thought of infinite time is more impressive than the thought of infinite space, for the reason that time is so intimately associated with the idea of birth, of growth, of development. When the astronomer measures space in terms of light-years, what staggers the mind is not so much the millions or billions of miles as the immensity of time which may elapse between the first projection of a star's rays and the moment it reaches the earth.

There is a magnificent quality attached to the contemplation of time which does not characterize our thought of space. For time is measured in terms of moral value, and space in terms of physical value. This is the reason why the idea of time has always made so strong an appeal to the imagination of poets, philosophers and moralists. Nobody can moralize about space. One can hardly fail to perceive the moral content of time. Eternality is a universal conception of deity. Immanency is not. The most magnificent panegyric of deity which I know outside of the Old Testament contains but one reference to any spatial attribute of God:

"The *eternal,* the *uncreated,* the *undying,* to whom *time* brings no *change,* for *time* is *ever-flowing,* and *never* stays; it is a vessel charged with *birth* and *death*; it has a *'before'* and *'after,'* a *'will be'* and a *'was.'* It belongs to the *'is not'* and the *'is.' God is,* and that not in *time* but in *eternity*; motionless, *timeless, changeless eternity,* that has no *before* or *after.*"

Spatial attributes, when applied to the idea of deity, are vestiges of primeval or crude and undeveloped conceptions of God. Mr. Cornford in his admirable book, *From Religion to Philosophy,* has shown how early Greek theology (he calls it Olympian) was "dominated throughout by the concept of spatial externality," and, guided by that concept, culminated in geometrical atomism and physical science.

On the other hand, Orphism was "dominated by the concepts of time and number, the measure of time," and so developed the idea of justice and righteousness, and at last culminated in a great religion.

Pythagoreanism was deeply imbued with this perception of number as the measure of time; numbers signified the flow of time, and their relations symbolized birth, growth, change, progress, both in the natural and the spiritual world.

The greatest of the Greek thinkers rebelled against mechanistic and quantitative interpretations both of cosmology and religion. For Anaximander and Heraclitus qualitative differences were ultimate values. "All who are born," said Anaximander, "must pay the penalty of injustice by perishing according to the order of time." For Heraclitus time and flow were everything. In Pindar, Zeus is addressed as the son of Kronos and Rhea, i. e., of Time and Flow. Aphrodite was originally the Queen of Life. The fall of man, the breaking-up of the Golden Age of the gnomic poets, was the end of the reign of Aphrodite. In this myth the relation of life to time and the moral factor inherent in the idea of time are manifest. The degeneration of Aphrodite worship was the prostitution of the functional production of life to sensual gratification, by which the original beauty of the cult was destroyed.

If the ancient Greeks had continued to adhere to a purely spatial interpretation of life, they would never have created a moral philosophy, nor a spiritual religion, nor an organic society. The Greek states would have been mere physical agglomerations of men instead of social organisms. The conceptions of justice, religion and society were born of the Greek understanding of the nature of time. Hence Hesiod's *Works and Days* is both an agricultural treatise and a manual of ethics.

"This primitive correspondence between the ordered

process of the year bringing fruit," says Mr. Cornford, "and the 'appointed path' of 'seasonable works' which those fruits reward, helps to explain why the wheel of time is also the wheel of right." In Sophocles' *Ajax* the relation between lapse of time and inevitable justice is several times exquisitely expressed:

"Time in the length of his unnumbered years gives birth to all things out of the darkness, and when they come into the light hides them again. And so, too, there is a turn of the wheel that abases pride."

Ajax is made to say: "Even things dread and powerful yield to dignities. The snowy winter gives place to fruitful summer. Night's weary round makes room for day, with her white steeds. . . . And shall I also not learn to curb my pride?"

From the seasonal round of summer and winter it is an easy transition to worship of the heavenly bodies. Sophocles compares the turning of the wheel of human destiny to the waxing and the waning of the moon. "Sorrow and joy come round to all as the Bear moves in his circling path."

Nietzsche, in his *Birth of Tragedy*, has magnificently said that "a people (and for the rest also a man) is worth just as much only as its ability to impress on its existence the seal of eternity." This is what the Greeks did, and they did it through their perception of the moral attributes of time. To those having eyes to see and hearts to understand, the myths of Aphrodite and of Kronos and Rhea were intimations of God. But they taught by mystery and allegory, not by dogmatic and theological exposition. Just here was the ground of feud between Julian and the Church of the fourth century. The myths told Julian that the gods are, which is what the Christians denied. The dying paganism of the fourth century believed that "Greek philosophy was the relic of a primeval revelation."

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Greek philosophy recognized the inevitable justice of time. But it tempered that justice with mercy. Hence the Great Year. "The cycle, instead of going on forever, is terminated by the limit of the Great Year of ten thousand solar years; at the end of this period the soul may escape and fly aloft to the fiery heavens whence it came, regaining perfection and divinity. The new Great Year begins (for the cycle of time is endless), and a new world is born, to pass away in its season and give place to another."

It required the genius of Christian theology to devise eternal damnation, even for babes. Greek immortality (and the greatest of the Greeks did not so believe[1]) was life eternal, because it was never-ending functioning of the spirit through all time. But early Christianity's doctrine of the resurrection of the body, in the minds of too many, carried with it the idea of a physical heaven of endless material pleasures, not of spiritual growth. Along with this went a teaching of retribution and justice so crass and unethical as to make literal Christianity of the post-apostolic period a terrible disillusionment.

It is a sad commentary on the "progress" of humanity that modern Christianity has not yet wholly emancipated itself from the thraldom of this base teaching. Emerson was shocked into the writing of his essay on *Compensation* by hearing a sermon in a New England pulpit actually of a piece with this philosophy. In the opening paragraphs he tells the tale.

With the triumph of Christianity and the dogma of immortality a question was raised in the minds of men which pagan thought, so far as I know, busied itself but little with. Where was the soul, the I, the Me, before birth? Was it in time? or from eternity? and whence came

[1] The Stoic and Epicurean ruggedly resisted the belief in immortality as against reason and nature. Who does not know that magnificent passage in *Phaedo*?

it? St. Augustine asked these questions in almost piercing accents.

"Those earliest years whereof I have no remembrance, which I take on others' words, and guess from other infants that I have passed, true though the guess be, I am loath to count in this life of mine which I live in this world. For no less than that which I spent in my mother's womb is it hid from me in the shadows of forgetfulness. What have I to do with that of which I can recall no vestige?.... Tell me, O God, did my infancy succeed another age of mine that died before it? Was it that which I spent in my mother's womb? For of that I have heard somewhat, and have myself seen women with child? And what, before that life, again? Was I anywhere? or anybody? For this I have none to tell me, neither father nor mother, nor experience of others, nor mine own memory."

The tragic questions to which the idea of time gives rise are only equaled by the tragic conditions which the passage of time imposes. It is a common saying that time will determine the measure of a man. But does it? Did not Sir Thomas Browne write more truly when, in that matchless essay on *Urn-Burial*, he said: "The iniquity of oblivion scattereth her poppy, and deals with the memory of man without distinction to merit of perpetuity.... Time hath spared the epitaph of Adrian's horse, confounded that of himself.... Who knows whether the best of men be known, or whether there be not more remarkable persons forgot than any that be remembered in the known account of time?"

Do the truly great get their reward in time? If time were juster, would not many now forgotten be known? *Ibant obscuri*!

There is nothing new in Nietzsche's doctrine of "eternal recurrence." It is as old as the Greeks and was a striking teaching of Siger of Brabant and the school of

Averroistic Aristotelians in the University of Paris in the thirteenth century. Siger had a vision of time not unlike the Great Year of the Platonists. He believed in cyclic evolution—that the ideas of an epoch or of a race, the laws, the civilization, the religion, would return to the point of departure. But as the series of variations and mutations which formed a cycle were almost infinitely long, men were unable to perceive the transitions or even to retain the memory of the changes. Nevertheless, these great eons succeeded one another, the long series of evolutions and transitions ultimately getting around in a circle to the beginning once more.

Mr. William Mackintire Salter is to be given the credit of explaining Nietzsche's "eternal recurrence" to the lay mind as no other commentator upon his philosophy has done. "If I read his mind and soul aright," he has written, "Nietzsche would rather have progress *ad infinitum*. But he takes the world's forces, and the sum of them after current scientific fashion, as measurable, finite. Hence when a certain point in their development and elaboration is reached, there *can* be no further progress, and in a world of movement and change, disintegration and recession become inevitable, with, in the course of infinite time, a repetition of the original developmental process. It was not wish, but intellectual necessity that compelled 'eternal recurrence' with Nietzsche."

Philosophers, scientists, even mathematicians, all are made poets when contemplating time. The brilliant mathematician Sir William Rowan Hamilton somewhere says: "To my particular constitution of mind a mathematic theory presents even more of the intense unity of 'the energy of a living spirit' than the work of a poet or an artist." And he proved the truth of the utterance by a notable demonstration that while geometry, considered as a science,

is founded upon the pure intuition of space, so algebra as a science is based on the pure intuition of time.

The idea of time unceasingly teased the minds of medieval schoolmen because eternality is an attribute of God. One of the most remarkable doctrines of St. Thomas Aquinas is the profound idea that, for God, time or succession, whether in the past or in the future, does not exist. If God remembered the past and was ignorant of futurity, his reason would be like that of man himself, and his knowledge would increase according to the development of his own creation. This would be an imperfection in the Deity. God would be finite, not infinite; mortal, not immortal and eternal. For God the past, the present and the future are an immobile, immutable present, an eternal vision.

The contrast between this stupendous conception of time by the mind of the greatest of medieval philosophers, and the naive mind of the medieval peasant is very striking. It is an important truth for the historical student to perceive that men belonging to wholly different orders and periods live side by side. The mind of the common man is necessarily compelled to concrete expression. Medieval law and custom abound with examples and illustrations of concrete, yet picturesque, concepts of time by the folk mind. A recent commentator on medieval jurisprudence has written: "It is often declared that. . . .a law shall endure so long as the wind blows from the clouds and the world stands; so long as the Main flows into the Rhine. If the shortness of a period of time is to be indicated, it is provided that a piece of land may be acquired during the sleep of the king; during the midday nap of the emperor; or so much land shall be acquired as can be ridden round in a certain time on a horse, or ass, or turned over with the plough, or covered with hides."

The only honest form of cheating is to cheat time—if you can! The inexorability of time and man's inability to

restore the past or to anticipate and govern the future was one of the strongest motives for popular belief in magic in antiquity and in the Middle Ages. Medieval folk-lore is saturated with this inheritance from antiquity. Some of the most beautiful of these tales have to do with the elusive property of time, and above all, with the way in which time may be cheated.

The story of the Garden of Eden became the source of a multitude of legends. The silence of Scripture as to the duration of the sojourn of Adam and Eve in Paradise led to all sorts of conjectures and suppositions. According to St. John Chrysostom they dwelt less than a day there, so great was their haste to disobey. Other theologians were not so pessimistic of original man's disposition to sin, and held that years elapsed before the fall. According to Mohammed (who had ninety thousand conversations with God while he was washing his hands), Adam and Eve lived for five hundred years in the Garden. But whatever the term of years, the figures have no significance, for since they were immortal before tasting the forbidden fruit, time had no meaning for them. They knew neither youth nor age.

One of the most beautiful and popular of these folk legends in the Middle Ages was the story of the Seven Sleepers of Ephesus. How old it is we do not know. But it first appeared in the West in the pages of Gregory of Tours, about 600 A. D. The tale relates that the emperor Decius, famed in Church history as the author of the first great persecution in 250, having decreed that all residents of Ephesus must offer sacrifice to the gods, seven brothers of the city, after distributing their patrimony among the poor, took refuge in a cave in Mount Celion in order to escape the edict.

Every day one of the brothers named Malchus descended the mountain and went into the town to buy bread. One

evening, while comforting each other with prayers, they all fell asleep. According to tradition their slumber lasted for three hundred and seventy-two years. While they slept, days, seasons, men, events moved on. Paganism disappeared and the world became Christian.

At last the brothers awoke, nor knew that they had slept so long, nor anything of the historical changes which had taken place. Malchus went into the city as usual to get bread. He was astonished to see the Cross on the gates of Ephesus instead of the imperial arms, and figures of Christ and the saints in the market-square. The temples were gone. On every side were Christian churches. He walked as a man in a dream. When he entered a bakeshop the baker refused the money which he proffered, marked with the image and superscription of the emperor; he believed that Malchus had discovered an old hidden treasure. In bewilderment Malchus asked for the members of his family. All remembrance of them had vanished. He asked to be taken to the emperor Decius. The people thought him mad.

Finally the whole city, the bishop St. Martin, the local magistrates and a crowd of curious people flocked to the cave in Mount Celion, where the six brothers were patiently awaiting his return. To the astonishment of all, their faces were rosy and full of health—*facies eorum tanquam rosas florentes.* The emperor Theodosius II was informed of the news and hastily came from Constantinople with a great retinue and a company of theologians. When he entered into the grotto there was no need of torches, for the countenances of the young men were like the sun for light. While the emperor embraced their feet, amid the prayers and tears of the multitude, the seven brothers quietly fell asleep again. But this time slumber stole away their spirits to heaven. They were dead.

We find the same tender indulgence of human imagina-

tion in order to defeat time in another form. In this instance the means of evasion is not dream but ecstasy. It is the story of the German Cistercian monk Felix. One day, it is related, he wandered forth from the monastery at sunrise into the woods. He was plunged in deep and pious meditation. A bird, "whiter than snow," was singing in the branches of a tree. Its song was so enchanting that Felix stopped to listen. One feels, in reading this tale, something of that sweet poignancy which Keats expressed in the "Ode to a Nightingale."

As the bird vanished, Felix heard the angelus sounding and hastened to return to the monastery. The porter did not know him. Felix told the story of the bird which he had heard. The porter rubbed his nose and looked askance at the monk. The abbot was summoned; with him came all the brothers of the cloister. Felix again told his story. They laughed derisively, and took him for a lunatic or a vagabond. Finally a very old monk, more than a century old, remembered that when he was a young novice he had heard the tale of how one of the monks years before had wandered off into the forest and never been heard of again.

The registers of the abbey were examined and at last the date of Felix's disappearance was found. More than a hundred years had elapsed between the dawn and the angelus, while he raptly had been listening to the song of the bird. That same evening Felix died with the light of a great peace upon his face. Supreme illusion! "Understanding is always the dupe of the heart," wrote La Rochefoucauld. Do we know truth as much by the heart as by reason?

An Italian *novellino* relates the story of three magicians who visited the court of Frederick II, that marvelous ruler in the thirteenth century whom men called the *stupor mundi,* the wonder of the world. In the emperor's presence they precipitated a violent thunderstorm, accompanied

by lightning and hail. Having received a reward for his feat they asked that they might have a military escort to protect them along the road. Frederick appointed a young knight named Boniface to be their guard. In a trice the wizards translated him to the heart of Asia, across seas and desert wastes and high mountains, and set him down in the center of a great empire. Here he won great fame as a knight in brilliant tournaments and as a warrior in battle, conquered many provinces and peoples, founded a kingdom, married a beautiful princess and raised up a family of sons who were almost as doughty soldiers as their father.

At last in his old age Boniface wished to return to the West to see the emperor, who, he reflected, must be somewhat changed by now, grayer but still with firm and elastic step, even after forty years. He arrived in Italy after long and wearisome travel—and found the emperor in the act of washing his hands for dinner. Count Boniface had lived a half century of war and politics before sundown of that day.

The story is the reverse of the tale of the Seven Sleepers, and of the monk Felix. Instead of a few hours having been stretched out into centuries, though the period seemed a mere moment, in this last tale fifty years of Cathay were compressed into the running of an hour-glass.

Such legends are not merely credulous beliefs of an ignorant and superstitious people, nor yet solely poetic fancies of the Middle Ages. They have their origin in human psychology. There is comfort found in illusion. What the world calls reality, to some seems utter unreality. The materials of life are common to all of us. But the kind of architecture is our own. Is a castle in Spain less real than an actual edifice of stone and mortar? To some of us Bohemia has a coast. To some objectively means incompletely; fulness is only found in the subjective. Time,

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which is another way of saying life, is what we make of it. It is as the late Professor Nettleship wrote in his diary (his *Meditations unto Himself,* like those of Marcus Aurelius)—"It is really true that this world is everything to us, if we only choose to make it so; if only we live in the present because it is eternity."

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THE CONCEPTION OF THOUGHT AS A CYCLIC PROCESS.

"THE eye is the first circle," wrote Emerson, "the horizon which it forms is the second; and throughout nature this primary figure is repeated without end."[1] Nature both draws circles and sends events round in them. There is a crescendo of recurrent cycles: from the rhythmic pulse, rapidly beating out the life of man, to the majestic period of 26,000 years which returns the wobbling pole of the earth to its original position. Recurrent rounds of repetitive change court notice by their frequency and impressiveness. The heart beats; tides rise and fall; sleep alternates with waking; moons wax and wane; egg comes from bird and bird from egg; the seasons return in order. To think of these as minor cycles in one great round of cyclic cosmic change, like day and night within the wider circle of the seasons, was natural, perhaps inevitable. An assembly of widening cycles, from the rapid pulse to the procession of the seasons, easily suggests a vaster, more eternal round that includes them all and constantly returns all change to its starting-point. A knowledge of astronomical recurrent rounds, wider still than the following of spring by spring, would readily open the Greek mind to receive the thought of one vast cosmic cycle. This crescendo of cycles may only partially explain the dominance of the cosmic-cycle conception in early Greek speculation, for, unlike the plant which grows from one seed, dominant con-

[1] *Essay on Circles.*

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cepts have more than one origin; but it doubtless had some share in that dominance. Rhythms tempt imagination to create for itself an ecstasy out of one stupendous cosmic cycle. A day in Brahma's life, ran the Hindu legend, lasted for 4,320,000 years; his year had 360 such days and his life was 100 years; then he began a new life.[2] Imagination thus gratifies its delight in immensity and balks the puzzle of eternity by making every ending another beginning.

When Thales started Western thought on its long march with a primary conception of one universal substance constantly evolving into all the varied items of the world and being constantly restored from them again, his notion of a recurrent cycle of change continued perpetually to fascinate many minds. Nietzsche, more than 2000 years after, sought an eternity for everything—"the sea will wash it up again." Eternal recurrence, he adds, reconciles the materialistic and Platonic extremes of thought. In an infinite universe, he argued, all combinations are realized an infinite number of times, and between any repetition and its recurrence all other possible combinations recur, because each combination determines the series in the same order. Therefore the universe is in constant circular movement.[3] Modern cosmogenic speculation, after opposing the old Greek notion that the cosmic process is a succession of repetitive rounds, tends to return to it. In the days of Clerk Maxwell the destiny of the universe appeared to be an absolute uniformity of temperature: then the birth of worlds would end and cosmic evolution conclude in all its forms. Many now suspect a constant birth of new worlds, which may continually originate life and evolve it. This view tends to receive the old Greek belief into favor, though it may not reconstruct it with so rigorous a metaphysic as Nietzsche.

Thought has constantly oscillated, in its vision of vast

[2] Maeterlinck's *Mountain Paths*, p. 209. [3] *The Will to Power*, Bk. 4, 3.

universal change, between this infinity of repetitive cosmic rounds and an infinitely advancing series. The same alternatives of circle or trajectory press for favor in other places. Louis Dollo prefers the trajectory or serial conception of life. His principle of the irreversibility of evolution affirms that an organism can never recover a previous state completely, even if it enters once again under conditions identical with those of its past life. This principle applies primarily to the race, though it may apply also to individuals. Birds, for example, cannot recover the teeth which they lost during the Cretaceous Period. A reptile who deserted the earth for the air was probably the ancestor of the birds. By fitting themselves for flight, with all its consequences, the birds were compelled to alter their reptile heritage—acquiring new characters and losing old ones. Among the losses were teeth. One ancient bird, the Odontopteryx, tried to regain them; but, instead of true teeth, which had been irrevocably lost, it could only acquire saw-like points on the sides of its beak and lower jaw. Dollo attempts to rest the principle of the irreversibility of evolution securely on induction by enumerating other failures analogous to the vain effort of Odontopteryx. He also attempts to establish it deductively. A change is produced by definite causes; only precisely inverse causes can reverse the change: unless the causes which lost birds their teeth are inverted, the lost teeth cannot be recovered. Such inversions are so improbable that reversions will not occur and life is essentially irreversible.[4]

The pineal gland seems to have left its past irrevocably behind it. The pineal gland is "a small somewhat conical body, of unknown function, situated behind the third ventricle of the brain, and containing sand-like particles."[5] Descartes suggested that it was the seat of the soul. Mod-

[4] Branislav Petronievics, "Sur la loi de l'évolution irréversible," *Science Progress*, Jan., 1919.

[5] Murray's *Dictionary*.

ern guesses at its "unknown function" centered steadily on the surmise that it was either a vestige of a central eye or a futile attempt to develop one. Paleontology has apparently confirmed the vestigial eye theory. The ancient amphibian Sphenodon had a third eye in his middle forehead and some of the great winged lizards had also a central eye. The pineal gland appears to be the dwindled remnant of nature's abortive cyclopean experiment. It has, however, not remained functionless: it has substituted one duty for another. "We have hitherto regarded the pineal gland," said Professor Keith recently, "little bigger than a wheat-grain and buried deeply in the brain, as a mere useless vestige of a median or parietal eye, derived from some distant human ancestor in whom that eye was functional, but on the clinical and experimental evidence now rapidly accumulating we must assign to it a place in the machinery which controls the growth of the body."[6] It acts, apparently, by secreting "morphogenetic hormones" and letting them loose into the circulatory system. These minute circulating substances extend pineal influence to the whole body by stimulating or directing the growth of its various organs. It is incredible, or almost incredible, that the pineal gland should ever travel backward along its original route and restore the third eye of Sphenodon to his descendants. We can be reasonably assured that we shall never suffer the inconvenient and unesthetic possession of an eye in the middle of our foreheads. Dollo's principle of the irreversibility of life seems, here at any rate, to be both certain and welcome. Euclid was fond of insisting that what applied to a particular triangle applied also to other triangles; similarly, we may suppose, that as birds cannot recover their ancestral teeth or we our ancestral central eye, so life in all its physical aspects is es-

[6] *British Association Addresses*, 1919: Address to the Anthropological Section.

sentially irreversible. It seems improbable that life on earth will ever return to the protoplasm from which it probably sprang. If there is a great cosmic cycle it probably does not include within it a minor cycle of life which constantly returns all living things to the primal germinal material from which they first came.

It would still be possible, of course, for successive developments to repeat the history of terrestrial life. If a large, swiftly moving body crashed into the sun a wave of heat would travel to the earth, destroy all life upon it and make of it a ball of fire. When it had cooled it might again bring forth life, which might repeat its present course. One description might serve as one history of many manifestations of life: as it has often happened on other planets, as it proceeds on earth, now, and as it is destined often to occur again. Such repetitions would be from fresh originations: they would not be recurrences in a circuit of change. The same irreversible march of life might constantly begin from countless cosmic centers, though each march were in a straight line that never returned upon itself. If life be really irreversible, man, as he now exists, will not revert to the species which lie behind him on his route. In the biological sphere, in the physiological domain, irreversibility seems to be the law.

Cyclic recurrence, as such, is not logically excluded by irreversibility. The circuit of development might, abstractly considered, circle from proto-life to man and round from man to proto-life again. Irreversibility, abstractly considered, only excludes an oscillation from proto-life to man and back from him, retracing its path, to proto-life again. The evolution of biological species, however, seems to present neither the possibility nor the appearance of cyclic recurrence. Life seems to grow away continually from its base in proto-life, constantly producing new species that do not repeat the old.

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It is less certain that there is no cyclic recurrence in human thought: less certain that throughout thought, as throughout nature, the "primary figure" of the circle is not "repeated without end." It still remains abstractly possible, despite seeming biological irreversibility, that the line from proto-life to man is really an arc, indiscernible as such, of a vast circuit between them. The arc often seems distinctly perceptible, if the circuit itself is not actually completed, in the line of mental movement. "Thoughts and things," wrote James, "are names for two sorts of object, which common sense will always find contrasted and will always practically oppose to each other."[7] Descartes encouraged philosophers to cut this distinction so deeply as to create an apparently insoluble mystery out of the connection between the body, which belongs to the world of things, and the mind, which belongs to the world of thought. There seems to be no possible point of contact between particles with material properties moving in space and the mind which seems to have no spatiality, no weight nor other material property. Greek thought began by making the distinction between thought and thing, between soul and body, without cutting it deeply enough to sever them. Aristotle, reviewing the opinions of his predecessors, remarks that they regarded the soul as "one of the objects which are in motion."[8] Both things and thoughts, soul and body, were composed of corpuscles, of material atoms: they were thus enough alike to be partners. Democritus assigned the more subtle, finer and swifter atoms to the soul to distinguish it from the grosser body and from things. He declared, adds Aristotle, "that those [atoms] which are spherical in shape constitute fire and soul" because "atoms of such configuration are best able to penetrate through everything, and to set other things in mo-

[7] *Essays in Radical Empiricism*, p. 1.

[8] *Psychology*, Ch. 2, Wallace's translation.

tion at the same time as they are moved themselves, the assumption here being that the soul is that which supplies animals with motion."[9] The parallel between soul and fire, which long impressed thought as very rarified matter, brings out very clearly this first effort of thought to connect matter and soul by composing them both of corpuscles and to distinguish them by assigning grosser particles to the one and subtler particles to the other. Some of the Pythagoreans, Aristotle continues, "maintained that the soul was the motes within the air. . . . because they present the appearance of continual movement, even though there be a perfect calm."[10] There were hints even within early Greek thought of the perplexing necessity, afterward firmly insisted upon by Descartes, to sever the nature of soul or mind from the nature of body and things. Anaxagoras, Aristotle notes, "describes mind as the principle of movement," and some Pythagoreans held that the soul put the "motes within the air" in motion.[11] The corpuscular view of the soul was already surrounded by suggestions that mind and soul were non-material and outside the world of atoms; but the opinion that mind is subtly corpuscular was a definite mental species in the beginnings of philosophy. Descartes stamped into thinking the distinction between thing and thought as corpuscular and non-corpuscular; but he, apparently, did not preclude a reversion to the older belief. Henslow, quoting Prof. Edgar Lucien Larkin, Director of the Lowe Conservatory in California, through Mr. W. Britton Harvey, describes a startling reversion to the old opinion of Democritus that matter and mind share in a common corpuscular constitution. "When William Crookes made his first experiments with high vacuum tubes, matter put on an entirely new condition. He called it 'radiant matter.' This was in 1879. The glowing bombarding particles he called 'corpuscles,' others,

[9] *Loc. cit.*, Ch. 2. [10] *Loc. cit.*, Ch. 2. [11] *Loc. cit*, Ch. 3.

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'electrons.' But the point is that nothing else, whatever, is in existence. All atoms of matter and of mind are made of corpuscles and these are *made of electricity and nothing else*. Telepathy consists of a flow of corpuscles away from a mental center and impact on another.... *Thoughts are things—currents of real corpuscles*.... Our minds, our very thoughts, conscious and subconscious, are flows of corpuscles. *Thoughts are as real as these corpuscles.*"[12] Thought seems to have circled back to Democritus—the belief that both mind and matter are corpuscular, and similarly corpuscular, appears to be a cyclic recurrence.

Participation in a common corpuscularity is one concrete expression of community of nature between thoughts and things. Primitive thought began with a general acceptance of this community, or, at least, with a general disability to escape from it. Australian aborigines still think that they can transfer toothaches to stones and so pass them into other unfortunates who chance to rub against them. The savage cannot realize that dreams are thoughts in his own mind and not "things" that come to him or to which he goes. A similar tendency to treat thoughts as if they were physical objects, like shoes and ships and sealing-wax, again pervades the thinking of the day. This tendency appears to be a return to an older method of thinking after a period of determined effort to place thoughts and things at opposite poles of being. It had seemed obvious that, though trees and stones and beetles were open to inspection by all, thoughts were privately experienced and privately possessed. They could be communicated, as a writer bares his soul; they could be deduced, as a man reads the face of his friend; they could be known through gesture, cry or speech. But the necessity laid upon men to perfect language for expressing their thoughts to one another seemed to be a necessity because these thoughts belonged exclusively to single

[12] *Proofs of the Truths of Spiritualism*, Ch. 13.

minds and did not dwell, like sticks and stones, in the open air. Memories of material scenes and things seemed to differ, in their privacy as mental existents, from the scenes and things of which they were memories. A mountain could be seen and remembered by a countless multitude; each member of the multitude had his own memory, independent of the rest, private and inalienable to himself, appearing before his own mind's eye whether others were experiencing it or not and dying with him without prejudice to the memories of others. Thoughts and physical objects seemed to be things apart, these being private processes in single minds, those being out in the open and accessible to all. To-day thoughts are being swept out of their isolation in single minds to keep company with outer things. It may be true that, as James thought, common sense will always contrast and oppose thoughts and things as if they were different sorts of object; it is also true that there is a tendency, too sharply marked to be mistaken, to treat thoughts as if they were things. In the preface to *The Candle of Vision,* "A. E." speaks of "...windows in the soul through which can be seen Images created not by human but by the divine imagination." The "Image," the mental picture, because it seems of all thinking most expressly to simulate the thing pictured (a mental picture in memory of a tree seems to be a copy of the real object in a way in which its verbal description is not), is most readily assimilated to the physical object. When A. E. speaks of images in the divine mind as if they were planets created by his hand and, like them, perceptible, he proposes them as candidates for the world of things—he sets thoughts in the same world as physical objects. He does not merely deviate for a moment from the customary opposition between mental images and material things when speaking of the divine mind. The pots we make or the books we read are *things*, extended in space, alterable in position, changing hands,

equally perceptible to other eyes and our own. He treats our mental images as if they were companions to these pots and books. "I know," he writes, "that my brain is a court where many living creatures throng";[13] "I was certain that the images which populate the brain have not always been there, nor are refashioned from things seen."[14] The image, from being a permanent resident in a single mind and stirred there originally into existence by the action of an external thing, has become a physical thing itself, passing from one mind to another, as a ball may be tossed from one hand to another. "I know that with the pictures of memory mingle pictures which came to us, *sometimes from the minds of others*,. . . .and as meditation grows more exalted, the forms traceable to memory tend to disappear, and we have access to a memory greater than our own, the treasure-house of august memories in the innumerable being of earth."[15] He makes a distinction still between memories in the customary sense, produced in private and experienced in private by a single memorizing mind, and images that lie in earth's treasury, like bullion in a chest, or stored in other minds ready for migration. But a diffusion has begun of memories, of mental images, into the physical world to join the company of things that lie openly without or move from place to place. He speaks of "quickened memories" invading his brain,[16] of the "reperception of an image in memory which is personal to us" as in no way differing "as a psychical act from the perception of images in the memory of earth," of "the ethereal medium which is the keeper of such images," of "pictures of persons or things long past in time" evoked "deliberately out of the memory of nature."[17] The physical thing continues unchanged by our gaze, as it existed

[13] *The Candle of Vision*, "The Many-coloured Land."
[14] *Loc. cit.*, "The Mingling of Natures." [15] *Ibid.*
[16] *Loc. cit.*, "The Mystery of Nature."
[17] *Loc. cit.*, "The Memory of Earth."

independently of it before, and it continues when our gaze is removed; the memory picture comes into being as we experience it, it tends to alter as we regard it, and it passes away with the passing of our attention from it—such, at any rate, has been modern belief. A. E. obviously speaks of some memory-images as if they retained their being, as if they migrated, as if they claimed an attention with which they were not simultaneously born: as if, in short, they were things like pebbles or telephone poles. He does not, perhaps, consistently and explicitly refer thoughts and things to a common realm of existence or to a common nature: he has a habit of thinking about images, or thoughts, as if he did so refer them, rather than an explicit adoption of that habit as a settled principle. "Imagination," he observes, "is not a vision of something which already exists, and which in itself must be unchanged by the act of seeing, but by imagination what exists in latency or essence is out-realized and is given a form in thought, and we can contemplate with full consciousness that which hitherto had been unrevealed, or only intuitionally surmised."[18] He does, however, steadily tend to diffuse out one class of images into the realm of physical things and to regard them as like in nature to those things. "We must infer," he writes, "when the image is clear and precise, an original of which this is a reflection."[19] The relation of physical object and image, Hyacinth's vision of himself in the water, is here applied to relations between an image, conceived as an object, and reflections of itself. "If I am reproached," he writes again, "for the supposition that the soul of earth preserves memory of itself by casting off instant by instant enduring images of its multitudinous life, I am only saying of nature in its fulness what visible nature is doing in its own fashion without cessation." Such enduring images resemble statues which exist at all times

[18] *Loc. cit.*, "Imagination." [19] *Loc. cit.*, "The Memory of Earth."

—whether they are or are not perceived: this curious reversion to the Greek theory of perception, which supposed our mental pictures of objects to be images constantly emitted by them, marks a corresponding reversion to a community of nature between thoughts and things. He distinguishes the "figures of human memory," accepting them "as being in two dimensions," from the "memory of nature" which "we see in undistorted pictures." In joining the company of physical objects these latter images assume their solidity. They also assume the independence of the perceiving mind which distinguishes the external thing: we must observe whether the horse stands or trots or gallops; we can imagine him as we like, even as breathing fire or swifter than the wind. The figures of imagination, A. E. says, obey his suggestions—they "will walk about with authentic motions and undistorted anatomies."[20] Such "authentic motions and undistorted anatomies," if they are supposed to be reconstructions by the mightiest conscious intellect, involve the intellect in incredulities: these "figures of imagination" are partly independent of the mind which receives them, as the flutter of a flag we have exposed to the wind makes our perceptions follow it and does not follow our perception—they imitate the behavior of real objects so exactly that they must be real objects received by the mind, though obedient to the suggestions of their host. A. E. discovers in his own images a conformity to the "intricate changes" of real objects in real life too miraculously faithful to be the result of his own mind. "I imagine a group of white-robed Arabs standing on a sandy hillock, and they seem of such a noble dignity that I desire to paint them....I say to myself, 'I wish they would raise their arms above their heads,' and at the suggestion all the figures raise their hands as if in salutation of the dawn....The invention

[20] *Loc. cit.*, "Have Imaginations Body?"

and actual drawing of the intricate pattern of light and shade involved by the lifting of the hands of my imaginary Arabs would be considerable. My brain does not by any swift action foresee in detail the pictorial consequence involved by the lifting of arms, but yet by a single wish, a simple mental suggestion, the intricate changes are made in the figures of imagination as they would be if real Arabs stood before me and raised their hands at my call." Such autonomous images must originate outside himself, thinks A. E., and exist independently of him; their autonomy resembles the autonomy of physical objects which change according to a law and order that is recognized and not imposed by the mind.

This identification of mental image and physical object is no casual vagary of a mind driven by vivid imaginative pictures into a confusion between them and outside things. A. E. has reacted to the stimulus of prevailing tendencies, though his personal psychical outfit may have made him very ready to respond to it. He has followed in his own mystical way the more sober, not to say prosaic, journey of philosophy. For philosophy, after a long effort to restrain mental images from mingling with outward objects, after attempting to deprive them of all qualities permissive of mimicry of the physical thing, after insisting on radical distinctions between non-mental bodies and themselves, is deliberately returning them to the outer reality from which they had been hustled into confinement within the mind. Utterances within the contemplative precincts of the Aristotelian Society outmatch, indeed, the imaginative fervor of A. E. Images, declared Professor Alexander, are external or physical because they have the characteristics of physical objects. This concisely summarizes A. E.'s deductions from his Arabs among the sand hillocks. The image and the percept are the same object in different forms—once more Professor Alexander clinches the adoption of the

image among physical things. The dream-apparition is physical[21]—again the philosopher is even more emphatic than A. E. who less concisely or unambiguously suggests that "to speak of the moving pictures of the dream as memories or unconscious reconstructions is to speak without subtlety or intellectual comprehension."[22] A stroller in the jungle meets a tiger and runs. In the quiet of his tent he sees, in memory, that tiger again and perhaps hears its jaws snap. He meets the same tiger, according to Professor Alexander, though he meets it differently, and he meets it again if he dreams of it by night. The same doctrine, sometimes with less explicitness and often with more reluctance to admit images and physical things from their separate folds in the mental and non-mental worlds into a share of common quality in a common realm, has spread widely through recent thought.

Images, visual images, pictures presented to the mind in memory, reverie and dream, are most easily placed in the same status as physical objects because, of all mental processes, they apparently most resemble them. James asked, more comprehensively, "Are thought and thing as heterogeneous as is commonly said?" With equal comprehensiveness he insists that they are not. "Their relations to time," he affirms, "are identical....both may be complex or simple. Both are of kinds, can be compared, added and subtracted and arranged in serial order. All sorts of adjectives qualify our thoughts....they are natural and easy, or laborious. They are beautiful, happy, intense, interesting, wise, idiotic, focal, marginal, useful, confused, vague, precise, rational, casual, general, particular, and many things besides. Moreover, the chapters on 'perception' in the psychology books are full of facts that make for the essential homogeneity of thought with

[21] *Proc. Arist. Soc.*, 1909-10, "On Sensations and Images."

[22] *The Candle of Vision*, "The Architecture of Dream."

things."[23] Thought seems to be making a circuit like the sun in his heaven. With a homogeneity of mind and body, of thought and thing, Greek thought began, and to this homogeneity thought seems to have returned.

Yet our mental life impresses us as irreversible. The middle-aged man can no more return to his childhood in mind than he can in body. His eye falls on the old copy of Robinson Crusoe as it lies forgotten on the shelf and he remembers the thrill when he read it as a boy. He takes it down and turns its pages, seeking for the old moment of fresh impression. He cannot recapture it. The old tale touches experiences that were not there to touch in the boy's mind: the old naïveté, the old freshness, the old openness to ideas which were new then and old now, are gone and gone forever. He has gained as well as lost: the tale has still charm, even more charm, but the charm is not the same. He has changed, and changed permanently. In his mental irreversibility he seems to resemble his family descent: his father did not think exactly like his ancestors, he does not think exactly like his father, his son will think differently from him.

Nations seem to resemble families and the whole human race to resemble nations: men seem unable to speak or write or think as they spoke or wrote or thought in the past. How different is the hand-writing in an old commonplace book, picked from its thirty years in the lumber-room, from the hand-writing of to-day! Paleographers tell us that manuscripts are dated by the character of their hand-writing, though the dating may require much study to decipher it. Style, too, dates the writer. Writers date themselves by their language, by their vocabulary, by turn of phrase, by texture of thought, by the centers of their interest, by the events they deem possible or impossible, by the allusions they make, by the illustrations they spon

[23] *Essays in Radical Empiricism*, p. 29.

taneously employ: by the whole nature, character and being of their thought and style. Each age has its own style and its own thought which stamp a date upon its writers. The writers of one epoch differ from one another, as no two peas in a pod are quite alike; but they all cover their writing with the same date, though they write down the same date differently. Any writing separated from us by more than a generation, a page of Scott, a scene from *Hamlet*, a chapter from *Don Quixote* or from Homer or from Herodotus, has "belonging to the past" as definitely stamped upon it as a recollection of childhood. It seems impossible to confuse one epoch with another or to suppose that any future epoch will repeat the features of the past. Homer, Plato, Isaiah, Dante, Cervantes, Shakespeare, Goethe, these names seem to represent periods of human thought that are as different from one another as they seem unlikely to recur: mental species that seem as different as the biological species that line the route of evolution. "Belonging to the past" does not, of course, mean "having no present value" nor even "having a value inferior to the present."

Thought may, however, travel in some closed circuits through successive and differing epochs. As the sun travels through the heavens he drags the earth continually through space. Within this path the earth ever circles round the sun: so may there be cycles of thought within the moving route of thought. But perfect cycles of thought, like perfect cosmic recurrences, logically deduced by Nietzsche or implied in early cosmogonies, are probably as abstract and as unrealized conceptions as the perfect circle defined by Euclid. Biology hints to us how to estimate the real significance of such apparent reversions as the resemblance of some speculations to the theories of Democritus, just as she hinted to us that all life, including the mental life which is its flower, is essentially irreversible. Nature does not make new species in the perfect likeness of old species; but

she does adapt old plans and use them in new contexts. Animal after animal is built on the old four-limb design. There is room for variation: the creature may have four legs, or two legs with two arms, or two legs with two wings, or it may, if it have marine habits, have legs and fins or fins only. Fundamental habits of thought underlie very diverse manifestations, as the four-limb vertebrate design underlies very diverse species of animals. One universal mental habit pervades thought from Democritus and before him, through Descartes and his contemporaries to the philosophy of to-day. The human mind has always formed its concepts on a few primary models of reality. Physical objects, things in space, independent of our thinking, compelling us to conform our thoughts to the order and law of their existence, are, because of the rigorous adjustment to themselves which they exact from us, one of the dominating influences on our lives. We have to think, because our minds are so predominantly adjusted to the external world, in terms of *things*—things existing in spite of us, singly, permanently, in a way that we have to learn and can only imperfectly control. However we endeavor to restrict thoughts to purely mental existence, however we endeavor to deprive them of the properties characteristic of physical objects, we cannot think right away from the habit of thought imposed upon us by the external world. We think of ourselves as spectators of independent things outside us and as co-actors with them on the stage with which they provide us. Our conception of ourselves and our thoughts is habitually formed upon this primary model of reality. The internal, private world of the mind, whatever our insistence on the absoluteness of the distinction between the mental and the non-mental, is an image of the spectator and his outside world, of the organism and its physical environment. We regard our thoughts as objects surrounding our ego because we

regard physical things as objects surrounding our whole persons. As we perceive and deal with our surroundings, so we are compelled to think of our minds or egos as experiencing and dealing with thoughts, ideas or images which form the contents of their inner, mental worlds. We are inveterate mental modelers on the type of reality provided by the spectator and his material world. This habit may be repressed, almost perhaps to apparent nothingness, as the four-limb mammalian design shrinks from notice in the whale. But it is always there and from time to time it becomes insistent. The electrons which some now suppose to compose both the mental and non-mental, both the physical and the psychical, are not the spherical atoms of Democritus. Thought has neither returned upon itself nor reversed its course to move backward. The modern neo-realistic equivalence between image and physical object is not a restoration of Greek notions of perception or imagination. There has been a fresh insistence by a permanent habit of thought. The common-sense opposition between thought and thing, affirmed by James, has never transcended the fundamental model of reality provided by the physical object. Thoughts have always been finally conceived after the manner of things, however scrupulously they have been distinguished from them. The electron-theory of the soul, the reduction by A. E. and by the neo-realists of mental images to a physical variety of status, James's drastic homogenization of thoughts and things, all these are extra insistences by a permanent mental habit, which continues to impress upon the human mind a permanent bias, of thinking of the mental in terms of the physical. Fate seems to have decreed that, in the last resort, mental images and statues shall inhabit the same world.

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THE LOGIC AND METAPHYSICS OF OCCAM.

THE following paper is concerned with certain aspects of the subject that retain an interest for the present time, especially those that concern the logic of Occam. But the metaphysics of Occam seemed to me too interesting to be neglected. Still, if I deem it advantageous to treat the logical and the metaphysical aspects of Occam's philosophy separately, it will not be possible to do so in rigid and complete separation, because the scholastic philosophy had developed into a logical philosophy, and because in writers of that time metaphysical elements were very far from being extruded from their logical treatments. Thus Occam did not merely develop the existing logic, but combined with it metaphysical theory as to the nature of individuals.

I. OCCAM'S LOGIC.

There is no need for me to give an account of the rise and development of realism, whose ascendancy was coincident with that of the scholastic philosophy. My proper concern is with the reactive and opposing spirit of nominalism, with Occam as its head and acknowledged exponent. The question between these two—nominalism and realism—had been raised by a passage in the translation by Boëthius of Porphyry's introduction to the logical writings of Aristotle, wherein were involved the nature of general terms and their relation to individual objects. The universal was to Occam only a common conception made by

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mental abstraction from the individual things—*conceptus mentis* signifying *univoce plura singularia.* Nominalism denied the existence of anything but the concrete. The real value of universals was denied by Occam. When, however, Occam is so often spoken of as representing extreme nominalism, it seems worth while to remember that a large strain of realism yet appears to have remained in him and other nominalists—so much indeed that his has sometimes been called pseudo-nominalism—since the analytical power of language was directed by them toward the interpretation of nature. The nominalism of Occam had real affinities, too, with conceptualism. Indeed, there have been thinkers who classed Occam as a conceptualist. If nominalism, as Anselm thought, took the terms expressive of general notions to be merely *flatus vocis*, Occam was far from holdng that view. To him universals were assuredly not fictional, not mere sounds. Occam's logic, however, was condemned by the University of Paris in 1339; the date of his death is variously estimated as 1347 and 1349. Nominalism had seemed routed by the scholastic ascendency and the triumph of realism already referred to, but this was far from what was really to happen. Duns Scotus, who taught at Cologne in 1308, was to assert the reality of the individual soul, in place of the former insistence on the principle of individuality (*principium individuationis*). The view of Duns Scotus, according to Occam, was that "in the thing that exists outside the soul, the same nature exists *realiter* with the difference limiting it to a determinate individual, being only formally distinguished, and in itself neither universal nor individual, but incompletely universal in the thing, and completely universal in the understanding." And Occam was, in somewhat extreme nominalism, to declare for individuals as the alone real (*sufficiunt singularia et ita tales res universales omnino frustra ponuntur*). In doing so, he was pointing the way to real science

(*scientia est de rebus singularibus*), through immediate apprehension of the actual world. Says Occam, "Nothing which is one in number can, without being charged or multiplied, be present in several subjects or individuals. Science invariably restricts itself to propositions regarding the known; it is, therefore, a matter of no moment whether the terms of the propositions are known things outside the soul, or only in the soul; and therefore it is not necessary for the sake of science to assume universal things, really distinct from individual things."[1] From another side, however, it has been urged that nominalism was skeptical of science; that it emphasized the individual, the particular, whereas science aims at the universal and the necessary. It would thus be a mass of individuals, lacking all law and order, and science would be impossible. It seems to me there are elements of truth, not difficult to reconcile, in both contentions. For with empiric observation of individual things, there must be conjoined the derivation of universal principles from the *inductive and deductive processes of our mental experience*. But nominalism was apt to contradict its own principles.

The revival and spread of nominalism in the fourteenth century was what might have been expected to follow a purely logical philosophy, and the results were big for science, too much neglected since the days of Roger Bacon, and of Albertus Magnus, who deserves far more scientific credit than he almost ever gets.[2] Occam relegated the universal to psychology and logic, and banned it in metaphysics. His main line of argumentation was "that the universal is not something real that has explicit subjectivity —neither in the soul nor in the thing. It is something conceived, which, however, has objective reality in the soul, while the external thing has this objective reality as an ex-

[1] Hegel's *History of Philosophy*, Vol. III, p. 84.

[2] Cf. my article in *Hibbert Journal*, July, 1918.

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plicitly existent subject. This comes to pass in the following manner. The understanding, which perceives a thing outside the soul, forms the mental image of a similar thing, so that, if it had productive power, it would, like an artist, exhibit it in an absolutely existing subject, as numerically an individual distinct from any preceding. "Should any one be displeased," Occam continues, "by this manner of speaking of the mental image as being *formed,* it may be said that the mental image and every universal conception is a quality existing subjectively in the mind, which by its nature is the sign of the thing, arbitrarily instituted for marking out that thing."[3] In such medieval connections it has, of course, to be remembered that the meanings of the terms "subjective" and "objective" were the reverse of what they are at the present day. The theory, described in the passage just quoted, led, as already hinted, to the discarding of that principle of individuation, of which the scholastic philosophers made so much. I do not dwell on this, as the subject will come up later. But I note it was a merit in Occam to have removed nominalism from the region of theological grounds, and to have maintained it as a philosophical question. It was, however, an exaggeration for Cousin to say that, theological matters apart, the whole of philosophy was, for the schoolmen, comprehended in the dispute between nominalism and realism. Nominalism had already existed among the Stoics, in their doctrine that universals—so far as common to all men—were established by the understanding or the universal reason. This was the outcome of their theory of preconceptions, which were held to be established by the activity of thought or the mind. Such was the point of departure of nominalism, in this Stoic denial of objective reality to universal concepts. Among the precursors of Occam's "terminism" was Durandus de St. Pourçain, who, though he lacked

[3] Hegel, *op. cit.*, pp. 84-85.

unifying and synthesizing power, denied the reality of universals, the real distinction between essence and existence, the existence of intelligible species, and maintained our incapability of real knowledge of God. Hamilton calls particular attention to the fact that the doctrine of species was denied by Durandus, and that Occam and Biel were early claimed to be in agreement with him on the point.[4] It was the character of nominalism, empiricwise, to proceed from particulars up to universals, to be more critical and disintegrative than constructive. This lack of initial constructive reason bred difficulties for nominalism, which came at length in its more scientific forms, like the nominalism of Occam, to feel the need of appeal to authority whereon to rest. That need was the germ of decay for scholasticism. Duns Scotus had occupied a more speculative position; to him, it might be said, the rational was the real. He was more rationalist even than Aquinas; for the realism of Duns Scotus (as Platonic) held universals to be real and before things, while the realism of Aquinas (as Aristotelian) held them to be in things, that is, as their ordering and unifying spirit. When nominalism gained sway, truth could no longer be sought by developing the contents of reason simply: appeal must be made to the facts of nature and the realm of inner experience. If this meant an opening for skepticism, it also meant the opportunity for more vital modes of thought and belief. It is time to note that logic has been at different times treated exclusively in nominalist, in conceptualist and in realist terms; and that it has some concern with all these three—with language, thought and things. Dr. Venn has spoken of "the triple correspondence" between these three elements. The thought side, however, is the most central for the thinking subject, whose mental activities are therein

[4] *Metaphysics*, Vol. II, pp. 36-37.

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regulated, since it carries its own logic inherently within itself.

The great work of Occam, *Summa Totius Logicae,* was one of severe precision and strict orderliness; by means of divisions, subdivisions, re-subdivisions, positings, demonstrations and solutions of objections, the work was carried out in massive form, not without affectation of mathematical order. Occam is free of the tendency to digression sometimes characteristic of logicians of that time, not least of his redoubtable opponent Wyclif, who, however, was no whit behind Occam in subtlety and originality. Lotze says of that period that "traditional custom directed attention almost exclusively to the concept, the most unproductive of the forms of thought; diverting it from the consideration of the judgment and the syllogism."[5] This is rather loose and vague, even if correct, i. e., even though we grant the tendency to treat essential concepts too often as distinct entities. It is more exact and helpful to say that Boëthius had proposed to use concepts and maxims for the upbuilding of science, as was practised in mathematics; that Anselm had put forward an *ensemble* of theorems relative to the Divine attributes and their *rapports* with the world; that Scotus Erigena had represented the purely deductive type; that logic had become, in the hands of the Arabian philosophers, the science of argumentation; that to Albertus Magnus, in the thirteenth century, it meant the syllogism, with consideration of induction (*inductio est a singularibus in universalia progressio*); that to Duns Scotus in the fourteenth it was the science of the syllogism; and that the dry syllogistic form of argumentation was no less followed by Occam, with not a little importance, consistently or not, still attaching to abstract notions. These thinkers, to whom the syllogism was a didactic procedure of the first order, would, I fear, scarcely have appreciated

[5] *Mikrokosmos,* Vol. II, p. 338.

the statement that "a trained logician may be a very poor reasoner, and a very good reasoner may know nothing of logical science."[6] That does not keep logic from being an aid to correct thinking, and the improvement of the discriminative powers.

The universal in Occam's *Logic* is sometimes real outside the mind or soul that knows it.[7] The universal is particular in our individual mind, but universal in the sense that it is a sign of things many. Universality, the *Logic* affirms, is nothing but a quality of certain concepts (*quod quodlibet universale est una res singularis et ideo non est universale nisi per significationem, quia est signum plurium*). But Occam was a startling innovator in his theory of knowledge, and his positions, as set forth in the *Logic,* must be taken account of. Occam, whose psychology we must allow to be somewhat involved here, rejected the *species intelligibiles* of Aquinas and Duns Scotus, for to him this would have meant a needless and unjustifiable doubling of the object or the external reality. This latter, as an object of knowledge, would, he thought, be assumed to have another existence—that of being psychically real. The idea or the concept merely forms a *sign* of the thing that corresponds to it. The sign, says Occam in the *Logic,* is that the knowledge of which brings us to the knowledge of another thing (*quod apprehensum aliquid aliud in cognitionem facit venire*). But the sign is not, in Occam's view, a copy of it. For the inner formation or structure is, to him, different in nature from the outer reality—of which it is *sign,* but not copy. The signs are arbitrary symbols, words, says the *Logic.* Things were, to Occam, other than our ideas of them. But the mind cannot think of the individual thing without thinking of a class to which it belongs.

[6] A. Rashdall, *Theory of Good and Evil,* Vol. II, p. 419.

[7] Yet his conceptualist leanings appear in calling the universal an intention of the mind (*intentio animae*) in the *Logic* (I, c. 15).

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Occam thus emphasizes the part played by the mind itself in knowledge. The "terminism" of Occam, which was bred of a reaction against the formalism of Duns Scotus, thus laid a certain foundation for an idealism of psychological and epistemological character, whatever we may think of it. Although Duns Scotus had been so largely charged with realistic elements, yet his insistences on individual experience called for a theory of knowledge like that which was advocated by Occam. This, however, has not gone without much criticism from realist philosophers. It is too often forgotten that, in his opposition to the doctrine of "species" as an *intermediary* between the object and the knowing subject, Occam had a precursor in Roger Bacon, who stood for direct knowledge. For him, the universal is a specific essence realized *tota et totaliter* in each of the individuals of a like "species."

It must be remembered, too, that Scotus Erigena, influenced by neo-Platonic realism, had found truth and being in the universal; so that the universal, that is to say, the class-concept or logical genus, had figured as the original and essential reality. By or through the universal, accordingly, the particular was to be understood, and from it was to be derived. *Universale in essendo,* said Avicenna and other Arabian philosophers. Universals thus came to be treated as substances (*res* giving rise to "realism"). The universals were not only held to be substances, but were considered the more real the more universal they were. It was in this realist atmosphere that Anselm fittingly produced his argument for God as the most real, because the most universal, Being. Aquinas, too, held the general or universal Being to be our first datum, yet he did not hold the Platonic independent existence of universals, but, Aristotelianwise, to the necessity of active and abstractive intellect. The first place was assigned by Duns Scotus to the single entity or particular object, from which the uni-

versal is abstracted. But the individual of Duns Scotus was constituted of the principle of the universal (*quidditas*) and the principle of individual difference (*haecceitas*). Their union in the individual made reality for him. Occam's leanings were with the Scotist contention, and he laid his stress on particulars. The universal was, to him, what had to be explained. The precise opposite of this position forms the logical difficulty to-day for some writers, who say the difficulty "that presents itself to logic is not in universals, for *all* logical entities seem to be universals, but in particulars. Can logic define a particular entity?"[8] Not that Occam denied the likenesses to be found in particulars, or that the likenesses are real, though abstracted from the particulars. He thus did not deny any and every sort of objectivity to universals, as we have already seen from the *Logic*. The universal is an intention of the mind (*intentio mentis*), the *Logic* says. Its character is conceptual (as an object), that is to say, not substantial. Occam significantly argues in the *Logic* that no individual could come into existence if the universal were a substance, because the universal in it would already be real in another. Everything that exists is singular and numerically one, he elsewhere affirms. But still, he does not deny some sort of objective existence—defective as it might be—to universals: he thinks we know them by abstraction or conception. But Occam thought that the self entered into the constitution of universals in a way that did not obtain in the case of the particulars. That is, he inclines to undervaluing the conceptual. But the generic notion, say, of "man," has certainly wider reference in reality—in things themselves —than merely as a thought, idea or concept, in the individual mind. The generic concept was therefore taken by realist contention to have warrant in the nature of reality, and to signify a perfect equality of essence, in spite of the

[8] E. B. Holt, *The Concept of Consciousness*, p. 43.

diversities found in particular individuals. Not without that essence could the thing be itself, and different from all else. Not without it can you have a true notion of any concrete thing or being. The essence you do not know *per se*, but as it individuates itself, for knowledge is of individual objects. The essence is the "whatness" of the thing, and is a universal, but it is an entity of the logical type. This does not keep the particularist from sometimes disparaging the universal as abstract, and lacking the rich originality of the particular. This is to overlook the real or factual value attaching to the abstract or universal principles, which are not without real basis in the nature of things. Occam's lack is in defining the universal otherwise than in a merely negative way: the particular he defines more satisfactorily, if only by his insistences on numerical difference.[9] Not that I attach the importance to numerical diversity that Occam did, in defining the particular, and that some have done after him, for here we are but in the region of the existence of the individual, and have not yet penetrated to the nature of the individual object; more than more existence is required for individuation, as Duns Scotus, in fact, clearly saw. He saw that the *haecceitas* involved something of the nature of "positive entity" or "individual nature," which became fused with the common nature. The individual is not something to be settled in terms of sense-presentation. The finite or individual is, no doubt, "for itself." But so long as you keep to a numerical one, you are shutting out relation, and making the one meaningless. The entity of the individual is something essentially intelligible—not material, and not accidental—for there is idea behind it. The *individuum* involves other individuals, yet it negates them all. The logical individual must be essentially unique: the mere empiric individual of

[9] Mr. C. Delisle Burns has a paper on "Ockham and 'Universals'" in *Proc. Arist. Soc.*, 1913-14, emphasizing this point.

sense is not enough. The value, however, of Occam's justice to the particular, such as it was, is not to be denied, for the particular is still sometimes treated as somehow deficient in reality. This is because it has not the definite, changeless character of the universal. In such a system as that of Dr. Bosanquet, for example, the finite or particular is interpreted in terms of the cosmic or universal. Still, the fact is to be recognized that Occam postulates also a certain objective reality for universals, though it might not be of an *in rebus* character. His treatment cannot here be developed in detailed form. If Occam did not succeed in reaching full and perfect treatment of the relations subsisting between universals and particulars, we may recall how difficult and disputed the subject still is, and we shall at least find much in his treatment to appreciate, as well as the fact of his striking insistence on its discussion in his time. Feuerbach once declared the relation of the general to the singular—of the species to the individual—to be the most important and the most difficult question in philosophy. This he held to be evidenced by the fact that the whole history of philosophy—the controversies between Stoics and Epicureans, Platonists and Aristotelians, skeptics and dogmatists, in ancient times; between nominalists and realists, in the Middle Ages; and between idealists and realists in modern times—has turned upon it. I have merely sought to indicate the attitude of Occam to the problem, as part of his general system.

One of the questions of greatest concern to logicians of that time was that of insolubles (*de insolubilibus*). The position of Occam on that subject has been stated as follows in the article "Insolubilia" in Baldwin's *Dictionary of Philosophy*: Occam "admits the validity of the argumentation" (whereby propositions were shown to be both true and not) and of "its consequence, which is that there can be no such proposition, and attempts to show by other

arguments that no proposition can assert anything of itself."[10] The article goes on to say: "Many logical writers follow Occam in the first part of his solution, but fail to see the need of the second part." I am myself much inclined to agree with Occam on both counts. With him on the first, because such proposition is not a true proposition, only a pseudo-proposition; for a proposition must be either true or false, not "true and not." The proposition exists, of course, as a form of words; has being, that is to say—the only truth it has—but is not a proposition, for it has no meaning. With what Mr. Russell has said as to "Being," what I have now said is in accord, for he says that "being is that which belongs to every conceivable term, to every possible object of thought—in short, to everything that can possibly occur in any proposition, true or false, and to all such propositions themselves." The position is not new with Mr. Russell's formulation of it, as I have met with it in able but little-known logicians, many years before. But it makes being, I think, the lowest possible category, lower, if possible, even than Hegel thought. And it does certainly not follow that all the propositions which have in this sense being have any sort of logical value or meaning. I am with Occam on the second issue, because a proposition must have meaning or signification, apart from or independent of the proposition itself. The proposition cannot include itself, it is sometimes urged, in its own meaning, and with this I am inclined to agree. Says Dr. Bosanquet in his *Logic*: "It is essential to the judgment to affirm a reality outside itself." Formal logicians like Drs. Venn and Keynes insist on the necessity of objective order of some sort in logic, while Sigwart thinks the assumption of an objective order does not even call for justification. I cannot follow Fries, who is a psychological logician, in holding that every proposition asserts its own

[10] *Summa Tot. Log.*, III, iii, c. 38 and 45.

truth (the truth of itself), but I agree with him that that is no proposition which asserts its own falsity, and that is precisely what the *Dictionary* article assertion does. For Fries psychological basis was sufficient guaranty, and to him transcendental method in logic was superfluous. But he and other German psychologists have not shown why, if there are no universals, we can still think and mean them.

The question of insolubles is, however, a much larger one than might be thought from the *Dictionary* article They took many forms, often becoming mere dialectical puzzles. One of them, for example, is that given by Occam's great opponent, Wyclif, who devoted much attention to the subject in his highly important treatise, *Tractatus de Logica* (not mentioned in the *Dictionary* article already referred to), edited by M. H. Dziewicki of Cracow. Wyclif supposes a man to have two slaves, A and B. He resolves to free A, if the first man he meets is a slave; to free B, if the first man he meets is a free man. A, happening to meet B, who is a slave, is instantly free; B meeting A as so freed, is also free; the case is logically impossible, argues Wyclif, but is to be legally met by freeing both. Many of the cases in that time easily ran into the absurd and ridiculous, so that the subject came to lose interest. It is not directly referred to in neo-scholastic text-books like those of Liberatore or Tongiorgi, nor in the *Logicae* of Ubaghs. Indeed, the logico-grammatical method of Occam, and the terminists generally, led to results so paradoxical and false as to give rise to natural grounds of complaint against its abuse. The case chosen for illustration in the *Dictionary* article already referred to, "This assertion is not true," is a negative insoluble, and the negative insolubles are particularly difficult. "This assertion is not true," is false, in the sense that it is true, so far only as it has being as a proposition, that is, exists. But if it be

taken as true, then it denies its own meaning. And so the endless round of true and false goes on, the "insoluble" being essentially something in which it is impossible to deny or to affirm. It is, in fact, a pseudo-proposition. The case in question is a proposition only if we hold that every sentence is one; it is merely a pseudo-proposition, if we hold, as I think we must, that a proposition must signify something true or false. But the syllogistic reasonings make this proposition "true and not," so it is not a proposition in the latter, which is the proper, sense. Since it is not a true proposition, what further concern has logic with it? I regard the syllogistic reasonings in the *Dictionary* article as mere interesting word-play, the proposition being no true proposition. They admirably illustrate the non-valuable, unmeaning character of "insolubles," although the article leaves the whole matter in far too indeterminate a condition, as I have shown. You cannot deal with such matters, and make no consideration of the different senses in which the word "true" is employed or understood. Every true proposition has truth for its primary signification, but "true" may be taken in an absolute sense, or it may be limited to mean only "true" as an existing sentence or proposition, or it may mean "true" of what is neither the proposition itself, nor in any way dependent upon it; or it may mean "true" in the sense that the proposition is in agreement with the meaning intended to be put upon it. What I have been saying is something different from the question of so-called degrees of truth, as that problem has been formulated and discussed by writers on symbolic logic.[11] But I think there is little in "insolubles" that is worth the concern of modern logicians, and nothing about them that casts any reflection on the real utility of logic, as a mental discipline.

It may be remarked that Gabriel Biel and John Buridan

[11] See, e. g., A. T. Shearman, *Symbolic Logic*, pp. 25-26.

were, among immediate followers, particularly able expounders of the logical ideas of Occam, and both metaphysical skeptics, but I have no occasion to discuss their work here. It is more important to note how, in subsequent philosophy, the nominalism of Occam reappears, so that, in an important sense, he heralded the dawn of modern philosophy in England, his discriminating mind and powerful personality marking him out from the other leaders of medieval thought. Then, not to speak of the realism of Bacon, there is Hobbes, whose nominalism found vent in the words: "One universal name is imposed on many things for their *similitude in some quality or other accident*, and whereas a proper name bringeth to mind one thing only, universals recall *any one* of those many." Like Hobbes, La Mettrie and Helvetius stoutly denied the existence of universals, for nominalism was largely supported by materialists. I think it worth noting that Bossuet, in contending with Leibniz, took the interesting position that the universal is not—so his attitude has by a French writer been expressed—"that which comprises all, but that which extends everywhere, that which, present everywhere, carries with it the ascendency of strength and unity." Berkeley's notable nominalism thinks "the generality of men" do not pretend to have such "abstract notions." He thinks particular ideas may, from "mutual resemblance," belong to the same kind, without the need of "any abstract general idea." Hume, too, laid great stress on perceived resemblance, and assailed the reality of universals just as the terminism of Occam had done. For Hume a genuine universal did not exist, either *mentaliter* or *realiter*. His influence on Kant is well known. The nominalist position was upheld by Stewart and Hamilton, the former repeating the perceived resemblance tradition with all faithfulness. What they all deny is, that this conception of similarity could really constitute a general notion. In Hegel, there is em-

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phasis on the fact that the universal is *actual* only as individual. That is to say, the species exists only in individuals, each of whom represents the whole species. In this way, the individual is the universal. Particularity is thus *determinate* universality. Lotze was a nominalist, denying the objective reality of the *genus* idea, to him universals have no real existence in things themselves. Rosmini, on the other hand, who says he has never had a thought of becoming a nominalist, holds that nominalism is a system which sterilizes humanity. His discussion is very suggestive; he thinks that, in a universal idea, there is the quality thought of, to which there is corresponding reality in external individual things; and the universality of that quality exists for him in the mind only. But enough has now been said of the subject.

II. OCCAM'S METAPHYSICS.

Some of the aspects which we have had to consider under the logical section, those of realism for example, one might have wished to include rather under the present section, as pertaining to ontology. But to-day we relegate them rather to epistemology, and Occam's epistemology we have already considered. What concerns me, however, is Occam's metaphysics proper. The arguments whereby rational theology had been wont to prove the existence of God were rejected by Occam, who left men faith here, not demonstration. In this Occam had the merit to anticipate Kant, but he fell back on bare authority, instead of on the practical reason, as did Kant. Neither the ontological nor the cosmological argument appealed to him. In fact, none of the truths of theology were to him capable of philosophical proof. The existence of a First Cause he regarded as a purely hypothetical necessity. He upheld the argument of Duns Scotus as to the impossibility of an infinite chain of causes, but Occam was distinctive in laying more stress

on the question of conservation than of production. "It would seem," said Occam, "that the priority of the efficient cause can be proved with more evidence with respect to the conservation of a thing by its cause than with respect to its production thereby." In this Occam had the merit to anticipate Descartes in the latter's third "Meditation." Occam said if a cause creates a thing, it can only create it a particular individual. He remained undecided whether, as a somewhat radical nominalist, to deny only the universal —equal constituents or sides of things—or the causal connection, changes of effect, between finite things, also. Yet the Ground of all things, unified, all-embracing, lies in God, whom the causal connection in whole presupposes. But if a rational or scientific theology can be thought to be grounded in Him, Occam for his part denied it any foothold within the circle of experience, and, as transcending such experience as obtains in the case of other individual beings, it is assigned by him to faith. This shattering the bridge between the particulars of sensible experience and God, as ultimate ground of all existence, was a most serious attitude for Occam and the nominalists to assume, for it shut off from view the reasonableness of what was to be believed, and yet thought to sustain the reasonableness of believing. Nominalism made religion something other than knowledge and philosophy, however, and by its emphasis on the significance of the concrete, it laid a new foundation for psychology.

We have thus seen that, in the view of Occam, speculation in general does not engage in the inquiry of God.[12] Occam thought, that is to say, that, apart from direct revelation, to which in fact his positivism led him, it was beyond the province of man to know what God is—His unity, and His infinitude. All this, however, did not mean that Occam, who was critic by nature, was either hostile or indifferent

[12] So his *Centilogium theologicum*.

to the Church, for he was neither. Luther, we know, praised Occam as the most ingenious of the schoolmen, and derived from him his conception of the Eucharist. Only in metaphysics was Occam skeptic; he was much less moralist and rationalist than might appear; in his religious philosophy, he *believed* because he thought we could not know. Occam's position was that science has only to do with phenomena which it observes, and that what lies beyond this is the object of belief alone. Duns Scotus had taken up a like position as to the separation, and even opposition, of faith and knowledge. Dr. Seeberg has termed Occam "a fanatic of logic," in the hairsplitting scholastic connection. But Occam's appeal, for all that, was to experience, and away from the prevailing abstractions of philosophy. And, although we are not concerned with that here, I may remark that it was a thing of great significance for the future that, in fixing the limits of theology as he did, Occam was acting in order to the independence of the sciences, of logic, of the science of language, of jurisprudence and of the State. For he certainly wielded the sword of a free spirit, alike in his teachings and in his life.

It must be noted that Occam denied all real distinction between essence or "whatness," and the existence or "thatness," although it could be, and was, very ingeniously presented: "Existentia et essentia idem omnino significat," he says. A real distinction between them had been held by Aquinas, Albertus Magnus and others, while the distinction was treated as not real, but merely virtual, by Alexander of Hales, Durandus, Biel, and later Suarez. Duns Scotus did not treat the distinction between essence and existence as a real one, nor yet a virtual one, but regarded it rather as *formalis,* of the kind between a reality and its intrinsic modes. These divergent views, despite the difficulty of reaching satisfactory clearness in respect of them, seem at

least to testify to the desire of medieval thought to attain insight into the nature of reality.

The will is, for Occam, the essence of the soul, and he is a thoroughgoing voluntarist, as Duns Scotus also was. "Eo ipso quod voluntas divina hoc vult, ratio recta dictat quod est volendum." The absolute self-determination of the will is maintained by the critical and skeptical Occam, just as Duns Scotus had maintained that the will determines itself. Occam, however, fails to distinguish between the free act and spontaneous action. All variation in the degree of freedom is to him impossible. He renders the primacy of will over knowledge void of meaning. Freedom in God is to him that of His being arbitrary sovereign of good and evil, which is unsatisfactory enough. In so maintaining, after Duns Scotus, that the Divine Will—like the human will—is independent of reason, and that the Divine ordering of the world is purely arbitrary, Occam strangely failed to see that his position was inimical to all reasoned morality. It was on this conception of Almighty arbitrariness that Occam's positivism was finally based Occam also erred in thinking things intrinsically possible, because God can create them, instead of regarding His power to create them as due to their being intrinsically possible. But he did not err when, in the *Logic,* he offered a *Deus non posset* to making a contradiction in terms valid.

I now turn to the metaphysical concept of substance. It is easy to see that Occam's conception of substance is one that relates only to reality accessible to the understanding, and not to incomprehensible truths of revelation. It naturally thus refers only to finite substances. He says that a cause, in creating a thing, creates it only as a particular individual. For Occam, the individual is the true substance, of which there is intuitive knowledge (*nihil potest naturaliter cognosci in se, nisi cognoscatur intuitive*): the universal takes its independent form from intellectual trav-

ail. A German writer has asserted that Occam's philosophy always founders in subjectivism. That is clearly not the case. Intuitive knowledge, with Occam, always attains to what is really extra-mental (*res extra animam*): it is only the abstract concept which is shorn of connection with the things themselves. Subjectivism may be applicable to abuse of Occam's doctrine, but not to that doctrine itself; Occam distinguishes the particular from the universal by the fact that it is a substance. No universal is a substance, says Occam in the *Logic*. A *suppositum* or "hypostasis" has been used to mean a substance, complete as such, the idea of which has sometimes been spoken of as presupposing a *substratum*. By Occam the term *suppositum* is used in a different sense or meaning from that in which it had been employed by Aquinas. Thomist doctrine took the "hypostasis"—called personality in intelligent beings—to be something real, superadded to the substance, a doctrine opposed by Duns Scotus. Substance and hypostasis had been earlier distinguished as universal and particular. A person is an intelligent *suppositum*, but, as the suppositum must have a nature such that it forms a whole by and for itself, *supposita* may include other organisms than man. There is for Occam, however, no real universal besides the particular, not even in things, consequently there is for him no concept of being. So it is said in his *Logic*.[13] There can therefore be for Occam no substrate in things, from which a receptive being is to be distinguished. Occam uses the term *suppositum* after the sense of the terminology of what was considered the modern logic of that time, namely, to express that for which a word or a concept comes to stand as a *sign*. Though a term be so used as a *sign* for that which it means, the *sign* is different from the thing itself. But this significant use of the word no longer involves direct reference to the thing itself,

[13] *Summa Tot. Log.*, c. 16.

but primarily to its idea. This was part of the "terminism" which, as we have already seen, Occam developed.

Some notice may here be taken of the form of words called "Occam's Razor" for getting rid of superfluous entities—"Entia non sunt multiplicanda praeter necessitatem." This principle we have already seen at work in Occam's rejection of "intelligibiles species" as needless, and in his rejection of the distinction between essence and existence. In *Mind* (July, 1918), W. M. Thorburn noted that in nearly every modern book on logic the words quoted are given as those of Occam, but this is done without any reference ever being given to any particular work of his. He is, after search, skeptical of Occam's propriety in the phrase. The Law of Parsimony was used by Duns Scotus and Occam in certain variant forms, but Mr. Thorburn does not believe the current formula was known to Occam. He appends some quotations of the Law of Parsimony in its variant forms, one of these being "Frustra fit per plura, quod potest fieri per pauciora"—a form found in the *Summa Tot. Log.* of Occam and elsewhere. Another form of the terminists was: "Non est ponenda pluralitas sine necessitate," to which Turner's history gives a reference in Occam.[14] I shall now add another to Mr. Thorburn's list, taken from the Latin works of Wyclif. It occurs in his work "De Actibus Anime," edited by M. H. Dziewicki of Cracow, in a volume entitled *Miscellanea Philosophica* of Wyclif. It occurs on page 119 and runs thus: "Quandocunque natura potest cum paucioribus mediis in finem aliquem non multiplicat plura," etc. The editor gives reasons for saying we may "safely assign to this work a date anterior to 1361." I have dealt with "Occam's Razor" under this head only because of its metaphysical associations in general usage, although Mill declared the Law of Parsimony to be "a purely logical precept," which would

[14] In II *Sent.*, Q. XXIV, Q.

rank it with methodology, rather than with metaphysics. Still, the fact must be kept in mind that the knowledge of existence is always, to Occam, intuitive, not conceptual nor abstract; for him the real is individual, not universal. I have thought the matter worth some reference, since the formula, attributed so generally to Occam, is not referred to in works like Eucken's *Geschichte der philosophischen Terminologie,* nor in the Appendices to Harper's *Metaphysics of the School,* nor in the article on "Latin and Scholastic Terminology" in Baldwin's *Dictionary of Philosophy.*

Occam discussed continuity and the infinite indivisibility of space, it may be remarked.[15] A metaphysical feature of nominalism was that it did not hold to the independent existence of space, only to things conceived in space. Space to it was fictional, taken apart from singulars occupying space. The number of existing singulars must, to nominalism, be finite, but the number of possible things might be indefinitely great. And the same thing held true of time. The particular has, of course, relations to space and time, such as are not found in the case of the universal, yet it will be seen, from what has been earlier said, that the particular is not to Occam explicable merely in terms of space and time. Yet space and time were the great individuators to Schopenhauer, a view which requires more explication than he has given to it, before it can be accounted satisfactory.[16] Wundt does something of the same sort of unsatisfactory thing when he, in his logical treatment, makes the individual consist in the *this* of space and time—the *here and now* object. This individuation in space and time, as something which no other object can then and there occupy, does not explain the essential nature of the individual. This has, no doubt, a non-substitutional character,

[15] See "Occam on Continuity," by C. Delisle Burns, *Mind,* Oct., 1916.

[16] *Die Welt als Wille und Vorstellung,* Vol. I, Bk. 2.

but it consists in the essentially unique character of the individual, not in its particular occupancy of space and time. You cannot define individuality by mere spatial character and physical exclusion in such a way. The metaphysics of individuality would take us, ultimately, up to Divine individuating Will and Love, in the cosmic actualizations of Deity. On the other hand, the opponents of nominalism held space as for us real and unlimited, though space must always be filled by something not itself. Its ultimate parts were real indivisible points. So, too, for them time was a mode of being that implied changeable duration, but one that depended on the existence of the world. Its ultimate elements were real indivisible instants. But I have here no call to discuss the question further.

Occam held a form of corporeity and a sensitive soul in man, besides the intellective principle. In these matters he speaks mainly as a follower of Duns Scotus, and the words of Duns Scotus are these: "The substance of the soul is really identical with its faculties; so that while, in relation to body, the soul is its substantial form, it takes the name of different faculties according to its different operations." That is to say, there was no real difference (*sine diversitate reali potentiarum*), however there might be formal or logical distinction, between the faculties and the mind. The soul, "by its own substance," said Duns Scotus, is "at once the efficient cause and the subject, not by any faculty which is really distinct." Occam rejected the theory that the vegetable and sensitive souls (*forma corporis, anima sensitiva*) were identical with the *anima intellectiva* or thinking soul. Occam held, psychologically, to the superiority of intellectual intuition over that of sense. Intellect, he says, is not confined to the knowledge of *sensibilia,* but intuitively knows *intellectibilia,* which do not fall under sense (*nec sub aliquo sensu cadunt*). But such intuition he refers, it should be said, to the states of the

soul, rather than its substance. Our knowledge of the sensible and of the intelligible, thus claimed by Occam, does not, I may remark, involve that there are no conflicts between reason and sense, for these have not even yet been laid, except in too easily satisfied philosophies, even though the gulf between reason and sense was in a measure bridged so early as Plato.[17]

As to immortality, Occam shared the doubts of Duns Scotus as to the immortality of the soul being demonstrable by human reason; only faith could apprehend it with certitude.[18] It is, of course, a purely negative attitude, one which does not take account of positive arguments for immortality. But a still more negative and skeptical attitude was assumed by that latest of schoolmen, Pomponazzi, who, while arguing for the soul's mortality, in his work *De Immortalitate Animae,* went beyond his immediate scholastic predecessors in making virtue an end in itself, in anticipation of Kant. I mention Pomponazzi only because, in the controversial storm which he brought upon himself, he took refuge, like Occam, in the distinction to be drawn between science and belief.

In concluding this paper, I may observe that its importance lies in its belonging to the historical approach to the questions with which it is concerned. From the issues of nominalism and realism onward, we have seen that they concern problems that are with us to-day and in respect of which we owe greatly to thinkers like Occam. We are still discussing essence, or, as it is now called, "meaning" —where Occam and the scholastics generally spoke of essence or quiddity—whether it stands for an existent or represents the character of an object. They spoke of essence in the wider sense of including being in general, not simply the specific nature of a particular object. And of

[17] J. Burnet, *Greek Philosophy,* p. 349.

[18] *Quodl.,* I, 10.

existence, philosophers are chiefly anxious to-day to say that it is value. But our appreciation of value must not land us in any depreciation of reality. Again, in respect of the seeming arbitrariness of the logico-grammatical method of Occam and the terminists, we have to remember that, in the dependence of thought upon language, language was formed long before mental processes were interpreted by psychology. James has said that "philosophy has always turned on grammatical particles." Even yet we recognize how little conceptual thought can have its development carried through without the aid of language, especially through the formation of general concepts. The concept is conserved, grows fixed and definite, by means of the specific verbal symbol; words being, as Hamilton said, the *fortresses* of thought, even if the fixity and definiteness should remain—and desirably so in a developing order of things—no more than approximate. And this elaboration of concepts proceeds as we now recognize, through processes of attention, comparison, analysis and generalization, until universal ideas are reached.

The nominalism of Occam's time is, under restatement, now represented in the tendencies of modern empiricism, and the realism which he opposed is represented, more broadly, by modern epistemological realism. But realism has always had the object of knowledge for its concern, and is to-day mainly occupied with emphasizing the completeness of the object, without the knowledge of it. But the reality of the universal is the maintenance of realism, though we hear less of it. The empiricism, which, I have said, now represents the nominalism of Occam's time, is illustrated in Bain's denial of abstract conceptions and universal relations. Bain missed the essential meaning of abstraction, and was pretty well refuted within his own school by Lewes. Said Lewes, "In every science the concrete real is stripped of all its qualities except those which

the science needs for its construction." "The substitution of an ideal object for a sensible object, an abstract for a concrete, is the substitution of a general for a particular relation."[19] "To the geometer a circle is not the round figure visible by his eye, but a figure visible by his mind, in which all the radii from the center are absolutely equal, it is not this particular sensible circle, it is the ideal circle."[20] Later, in the same volume, he says, "The objects of mathematical study are reals, in the same degree as that in which the objects of any other science are reals. Although they are abstractions, we must not suppose them to be imaginary, if by imaginary be meant unreal, not objective. They are intelligibles of sensibles: abstractions which have their concretes in real objects."[21] "These things are fictions, but they have a real existence, though not in their insulation of ideal form, for no idea exists out of the mind. These abstractions are the limits of concretes."[22] So conceptions take the place of perceptions, but without any loosening of the hold on reality. Not only the empiricism of Bain, but the more recent empiricism of James and Dewey is unsatisfactory, alike in its default of any manner of accounting for the reality of universals, which admittedly enter "somehow" into experience, and in its inability to obviate the stark dualism of particular and universal, which faces its immediatism. One may very well agree with James that "all the thickness, concreteness and individuality of experience exists in the immediate and relatively unnamed stages of it,"[23] and yet hold the unsatisfactorinesses, which I have just indicated, to remain undisposed of by the empiricists or immediatists. For universals are not immediately experienced, nor has it been shown by the imme-

[19] *Problems of Life and Mind*, Vol. I, p. 344.

[20] *Ibid.*

[21] *Loc. cit.*, p. 420.

[22] *Ibid.*

[23] *A Pluralistic Universe*, p. 280.

diatists that they can be; they are always mediate terms of thought. We do not, in intuitive thinking, have regard to the universal element apart, or in distinction, from the particular embodiment. Universals are not immediately experienced *as such*; they are developed and interpreted in the process of speculation. We have seen how we are driven to the use of symbols; the symbol is, as we know, the creature of logic; and the symbolic always lands in a logical universal.

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LOGICAL FICTIONS.

IV.

Words, then, like other things, are symbols representing our interpretation of the external world, as we call it. And it is remarkable how often men have said that words may be mere counters with no meaning behind them and how seldom that things may also be mere counters with no meaning behind them. In *Faust,* Mephistopheles says: "Allwissend bin ich nicht; doch viel ist mir bewusst," and he tells Faust's disciple: "Von einem Wort lässt sich kein Iota rauben." We shall see presently that, far from being the permanent treasure of Mephistopheles's sarcastic teaching, a word is as hard to pin down as a thing (like the space between two trees) and it is as hard to say what a word means as to foretell what speculative shares may be worth in a year's time. For words considered as sounds or sights are physical objects that affect us (like the space between two trees) through the senses, and like other objects affecting the senses are symbols (or key-notes) by the help of which we scale our patterns. Thus considered, what we call words are fictions, just as a tree is a fiction. It is impossible to say what a word is: but all of us recognize what is a word, because it becomes a word the moment we admit that it answers to our idea of a word. As a matter of taste, taking a pedantic point of view, I may say that the phrase "pip emma" does not consist of words. As it is a matter of taste, I am entitled to select my point of

view. But if we agree to take the point of view of a cable company, taste is out of the question: and it is a matter of science whether there are any and, if so, how many "words" in "pip emma."

This is a matter of great importance in education, and we shall deal with it more fully in a subsequent chapter. For the moment it is sufficient to point out that when we allow children to read to their hearts' content, we may be doing them a great disservice. When a criminal is executed, from one point of view it may be "justice," from another point of view "a pity," from another point of view "judicial murder": from a childish point of view it may be "thrilling." It may be all these and many more; but for the child it is hard, perhaps impossible, to keep the points of view apart, and its judgment suffers. In real life we see experience from one point of view and judge from that: in reading books our judgment may be grossly warped owing to our vague view, shifting, as it may, from point to point under the influence of sentiment, until we feel sympathy for people who do things that would disgust us in fact.

But it may be argued that reading a book is only a special form of reading in its widest sense—that all experience is got by reading the external world, of which books are only a small part—and that all reading must be useful. It may be—no one will deny that. But reading books may be a form of self-indulgence in which we are too lazy to construct an adequate meaning for the symbols: that this may be mischievous may be seen if we take an extreme case, such as reading one's accounts carelessly: thus if I bought shares at $100 each and have entered them at that value, I may continue to think of them as worth $100 whereas on the market they are, let us say, worth no more than half. My symbol $100 is correctly read: but not fully, not adequately. We do the same when we trip

or miss a step or run into some one by mistake. Our reading was not complete. But whereas in what we call "real life" we get a practical demonstration of our error, the book gives us very seldom any indication of our errors of interpretation.

This means that at various stages of our mental growth we may have a varying range of what may be called "sufficient symbols." A child's interpretation of the symbol dog may be adequate for every-day purposes, if the child does not own and have to look after one: what is adequate for distinguishing dogs may not be adequate for distinguishing a dog. In the case of the owner of the dog the bark or the appearance would become an adequate or sufficient symbol: any one else might have to look at the name on the collar. In other words, symbols of all kinds (including what are called natural phenomena and words) give rise to various constructions under various circumstances. Strictly speaking, circumstances always differ; hence we may see the "same" symbol twice and consider it in the light of two different scales. Thus we see (as it is called) the same thing, but the thought is not the same. For example, a face may cause us to think of beauty, age, health or character. If at any time we resolve to see faces in the light of some new scale (say "a typical English face") we shall find in ourselves a new interest. And when we speak of encouraging the young to use their eyes, what we are really asking them to do is to see symbols as suggesting position on some scale, the nature of which we often forget to explain. It is of little (if any) use to see patterns (such as a track) if we do not connect it with another pattern (such as fox or bear) which supplies the scale. This consideration introduces the idea of "use," which brings out what was implicit in the term "sufficient." The formation of patterns, as we have seen, is largely a matter of emotion. In the same way the com-

bination of patterns is the result of interest or passion: fear, hunger, lust, and interests that have their root in these passions, are largely responsible for what may be called the adjectival attitude. For instance, a horse may be thought of first as "one"—"horsy one"— then *white* if we are interested in color, *tall* if we are interested in size. *worth much* if we are interested in price, *the property of a fool* if we are interested in buying it; every new pattern or scale that is added classifies or limits the original pattern from a new point of view, and if we shift from one to another it is at the prompting of some interest or passion.

Thus it appears that our thinking proceeds from the recognition of patterns, the discovery of the duties that are to be expected from our instances and the combining of patterns with patterns for the purpose of scaling them. Thus we recognize instances of "cat": we learn the duties to expect of every instance: we learn to locate any instances in space, time, size, breed, color, temper, age, value and so on.

This being so, it is clear that the difference between quantity and quality is a difference that rests entirely on convention and has no logical foundation whatever. Both quantity and quality, as usually understood, are scales, and both are mathematical: and there is no reason why a scale should be looked upon as giving quantity accurately (i. e., by measure) and quality vaguely (i. e., by impression). We give both quality and quantity as accurately as we want to. Thus I can say there are about 100 men, or that some one's work is excellent; but if I were required to do so I could state my measurements more accurately, *103 men*, and of all the work I am thinking of *the third best*. It will be seen in a later chapter that what we usually call positive adjectives are not positive: a positive adjective is not an adjective in the ordinary sense of the word, it is a part of a compound noun. A good shoe is similar in logic

to a horseshoe unless we are laying stress on "good," and in that case it means a *better* shoe. We get a blackbird or a black bird: in the second case the black clearly gives a color scale, just as bird gives the creature scale: but in blackbird the black is part of the pattern and gives no scale, as is seen more clearly when we speak of white wine.

The common assumption that mathematical, musical and scientific symbols are accurate, whereas the symbolism of language is vague and full of shades of meaning that cannot exactly correspond to the so-called complexity of life, reality, the universe and so on, is a superstition that has given a commission to much nonsense. The mistake lies not in thinking that ordinary language is vague and full of shades of meaning, but in thinking that mathematical, scientific and musical notations are perfect or accurate enough for all purposes. All these forms of symbolism work in the same way and are liable to the same defects. All start with patterns which are subjective and have to be connected with arbitrary symbols which may be subjective but are usually "We" symbols: and all these patterns are located by means of various other patterns (likewise subjective and connected with "We" symbols) and thus scaled as accurately as is required. Any mathematician, musician or scientist will admit that he works with symbols that are rough and ready—often far too much so; what is not so frankly admitted is that all these, together with the symbols of language, are rough and ready in the same way and for the same reason, because they are all essentially of one kind and work in the same way.

So far, then, we have seen that a word in the widest sense (including such symbols as H, 2, C♯) represents a pattern and is meaningless unless scaled by means of another pattern. H, 2 and C sharp *mean* nothing until we can scale them. Or perhaps it would be better to say they can mean nothing useful: for undoubtedly if we rec-

ognize something as hydrogen, we have the meaning that that *one* is a hydrogen one, by which I mean that that, in my opinion, will behave in a hydrogen way, which I could not do intelligently without knowing something about hydrogen and thus being able to scale it with such patterns as gas, matter, density. And this brings us back to the consideration of the behavior of our patterns, for we expect duties from them in order to be able to tell what happens on the time scale. The space scale is of vital importance to us if we wish to avoid accidents and to survive; the time scale is as important but in quite another sense: it is conceivable that it is the invention of a time scale that gave man his great advantage over other forms of life.

The conception of time has become so habitual with us that an educated man has to undergo a special training in order to think without it. It is true that the uneducated still use a very primitive time scale; but the uneducated take no part in building up any conception of the universe that would help them to explain the past or the future to any one's satisfaction, except perhaps in some narrow field of knowledge, such as husbandry or sheep rearing.

We have already seen that the popular idea of time covers two distinct things: there is, on the one hand, the present which is outside time altogether; on the other hand, time which is a pattern like any other and supplies a scale which (owing probably to its origin) has before and after aspects which are purely spatial; and it is curious to note that the time scale has much more of what is commonly called space than the space scale. The hope of ever discovering the origin of such a conception as time is no doubt vain. There can be little harm, then, in conjecturing that it arose from the fact that men lost themselves in deserts or on the high seas. In both these places the space scale fails: one is not interested—or rather there is no use—in knowing *where* he is, but it is profitable to

know *when* he is, whether at the third or fourth or fifth day's lapse. Such distances were not measured by space but by a more useful scale of time, and the mere fact that the space scale measures the tangible and the time scale the intangible gives some idea of the stride that was made by the first men who learned to use a time scale.

Popular superstition attributes a measure of reality to the "past" which it denies to the "future": it is important to recognize that this is nothing but a convenient fable. In practice and in theory it is necessary to work from the assumption that the only knowledge possible is in the present, but that by means of patterns and scales we can get the conceptions of a here and a there, a now here and a now there. Later we shall get a conception of what lies between here and there and between a now here and a now there. By this time we shall be well on our way to an intelligent view of the universe, but no amount of progress would ever make the past or the future visible: both the past and the future are constructions made subjectively (with "We" patterns, it is true) in the present, and of the two the future seems the better known, for our construction of the past is one which (by definition) is not so readily tested or verified. The babblers and gossips are the great authorities concerning the course of history yesterday: he who dares to tell the history of to-morrow must weigh his words and understand to-day as only a wise man may.

V.

As a boy I was brought up on mysteries. Faith was a virtue. And I was made to feel ashamed of harping on such grammatical questions as: "Why *three* persons?" I felt that two would be sufficient, and I still think that any open-minded grammarian must admit that there can be only two. It was also a riddle to me why in such a sentence as: "The dog bit the cat," the dog should be called the

subject. I saw the necessity of saying so for the purposes of examination: but when a master started to explain that it obviously was so, my instinct rebelled: for it was obvious to me (and still is) that, if that sentence had a subject, it was the biting, and that dog and cat were merely plus or minus adjectives "qualifying"—as we used to be made to say—the bite: for the bite is either a dog bite or a cat bite as the point of view shifts from the dog to the cat, and from an unbiased point of view, it is dog-cat biting; and the tense of it is merely the result of perspective due to the historian's point of view.

I would not for a moment deny the existence (or the charm) of mysteries. I am old enough to have discovered (and may be my sons have too) that mysteries often begin where a man's explanations fail. I admit that dogs and cats and bites are no less mysterious when parsed idiotically; nor are two persons less mysterious than three. What I want to argue and, if possible, prove, is that infinity and eternity are no more and no less mysterious than cats or dogs. In other words, I claim to be able to know just as much about eternity and infinity as I do about dogs or cats.

Everybody understands that you can go on counting the cardinal numbers forever and ever—and you can go on halving the half forever and ever. It is the forever-and-ever that is supposed to stagger the imagination. And yet there is nothing that we can think of that has not this forever-and-ever tail. Time ticks theoretically forever and ever; space is limitless; our bread and butter is infinitely divisible. It does not require much thinking to discover that everything we think of is infinite, but that it is impossible to think of it unless we think of it as finite. An ice cream is no more obvious and elusive than anything else: any child can tell us what is an ice cream, no scientist can tell us what it is. Any fool can tell what is Germany: will any one tell us

what Germany is? We all know what is a dream: who knows what a dream is? There seems to be still a kind of messianic hope that science will one day enable us to say what an ice cream is. It is one of the purposes of this chapter to help to shatter this belief.

When we recognize that we cannot tell the beginning or the end of a "heap," we are recognizing an obvious instance of what is the case with all things. There is nothing that we can think of, that cannot be thought of as being infinite; but the moment we think of it as infinite, it ceases to be that thing. A point may logically be any "size": in practice it is always impossible to arrive at a position without magnitude without being able to think of a position minus magnitude (it may seem very perverse to do so, but there is no doubt whatever that we can); but in theory it is always possible to take a point, be it as large as the world, and think of it without thinking of magnitude, and then you have the mathematician's desire, position without magnitude. But this is not because a point has no magnitude: it is because you can consider its pointedness without considering its magnitude.

If an iceberg is floating on the ocean, we can think of the visible portion without thinking of the submerged part; in fact, it is quite possible to have seen hundreds of icebergs and camped on them, without knowing anything about the submerged part. If the submerged portion extended down and down forever and ever, an iceberg would be a nice example of what things are like. For ordinary purposes of life, we deal only with the visible portion: if we try to get to the bottom of the other portion we are lost.

If I look at my fire and ask myself: "What is it that I call my fire?" I can soon convince myself, that although I know quite well, I cannot say exactly; or rather, I can tell you exactly, if you will allow me to take what corresponds to the visible part of the iceberg and ignore the submerged

part which, if I once start thinking of it, goes on forever and ever. Even such a stolid thing as my poker, if I put one end into the fire, ceases, I know, to be (if ever it was) homogeneous. And if I once begin to wonder what is going on inside it, I am slipping off the *thing* which is a poker—quite easy to conceive because I am thinking only of its pokerishness—I am slipping off into a consideration, let us say, of its molecules, or any other primrose path to the ever and ever.

Even such an abstract as "virtue" must be finite in order to be thought of. There was a time when I thought that definitions were to be found in dictionaries. But the philosophers who, in recent years, have been beholding logic in the light of mathematics, have changed all that. We now know that symbols have meaning only in series. What we call in English *that virtue,* that is, a particular instance of virtue which won a particular medal, is something located in a space series. If we speak of *a* virtue, we may still mean the same *thing,* but we are no longer in the same set of series: for instance, it is not located in space. We can also speak of *virtue,* and this brings in a series of "value" located in the present (which is no more "time" than the bridge over a river is water). In each of these series, the thing, virtue (or any other) has its forever-and-ever tail or submerged portion, and the moment we choose to think not of what is virtue but of what virtue is, we slip off into the inconceivable. We do not ask a policeman: "What is the way to. . . . ?" We say: "Which is the way?" The right answer to the common question, "What's the next train?" is "I'm sorry, but I haven't time to tell you." You are not thinking at all if you want to know what virtue is. You can't be thinking until you put the question into the form "Which is virtue?" Or, as the mathematicians might express it: you cannot think of one member of a series at all, unless you first recognize the series as a

series to which that member belongs. And *virtue* is meaningless unless you have a notion of the plus and minus neighbors which define it and thus furnish an equation.

It seems as if thinking is done by instinctively escaping from the infinite, much in the same way as Noah's wretched contemporaries dodged the flood for a while by finding effective spots. And infinity itself is perfectly conceivable, so long as we think of what is infinity, and not of what infinity is. I defy any one to tell me what a flood is: but in Noah's time even the children knew what was the flood.

For though what we are conscious of is infinite, we can concentrate our attention on some part: and that is called thinking. The field of consciousness thus defined is recognized as a pattern and can be, as we have seen, located on scales. What we call science begins in the discovery of another pattern which is different or another which is similar. These patterns are known to us only in their context which is infinite. But they are thought of with the infinity left out, much as bank returns may be given with 000,000 left out. We use 6, understanding that we mean six millions. So we use a pattern, let us say *fire*, understanding that we really mean *fire* + an infinite context. In recognizing that patterns are different we discover scales; when we scale patterns we are treating them as if they were similar. The moment we have differences and similarities we are dealing with what can be dealt with mathematically. It is commonly believed that we can count dogs; but it is impossible to add three dogs, and it is impossible to add a dog, a headache and a total eclipse, until we discover some common abstract by which they can be called three.*

It is natural, but risky, to assume that a prompt answer means much knowledge. If an examiner asks a child to say what it knows about either an acrobat or a micro-

*In fact you can count and name things only if you pretend you know only one thing about them, namely that they are "the same," which they are not.

scope, the common assumption would be, that, if both were familiar words, the choice of one would indicate that less was known about the other. But it is not paradoxical to say that it is easier to explain the "less known" than the "better known." For, putting aside the special case of examinations in which explanations are right if they satisfy the examiner, we may say that it is never the function of an explanation to explain: it is the function of human explanations to satisfy. (What happens when "things explain themselves," we need not stop to consider now.) The more we learn, the harder are we to satisfy: hence the common lot of all thinkers, who, like Faust, feel desperately lonely as they approach a position (which must be God's) where no explanation whatever satisfies. The strongest argument in favor of the doctrine of original sin is that human beings seem naturally hard to satisfy—children show it. Fortunately we have education to assure us that knowledge is bliss and that 'tis folly to be agnostic.

Or, again, we may say that the progress of science implies the reduction of knowledge. In this sense. If I had lived in the good old days when science had not progressed much, I should have *known* that all things were made by Jove; therefore, my kittens were made by Jove. Science would have progressed and I might have learnt that Jove made only white kittens: the black ones clearly were attributable to Pluto. This looks like additional knowledge. But sooner or later I should have come across a kitten white and black: who made it? And I begin to regret the blissful days when I *knew*. My ignorance becomes still more profound when I discover one fine day that a cat makes a kitten: it becomes almost intolerable when I realize that it takes two cats to make a kitten. And I go down in sorrow to the grave, wondering what it takes to make two cats.

However, in spite of the progress of science, most of

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us still behave in ordinary circumstances as if we were wise. In spite of my ignorance, I go into a baker's shop: and although I have no idea what bread is, I am probably content to accept what is offered as if it were bread; I feel that I know it is bread, though I don't know what bread is; I see it weighed, and although, in my ignorance, I cannot tell what immeasurable error there may be, I am content to accept it, as if it were a loaf.

What is it that enables us to do business so confidently in such a field of ignorance? Surely, those finite patterns of which I spoke. I go into the shop having three definite patterns: bread, loaf, loaf of bread. If I get something that answers to those patterns, I am satisfied. If I can concentrate attention on the infinite context that surrounds me and I find something that I can accept as answering to my pattern bread, I say that I know that that is bread.

My small boy (aged 2) is an authority on the cat pattern. He spots them all over the place. But a good many spots of the infinite context which fit his cat pattern—and he *knows* they are cats—would fit patterns which I call bears, tigers, leopards, panthers, etc. What I call a lion pattern is still a cat for him; but he has doubts: his ignorance is increasing.

Such a pattern has to be developed by each individual for himself in response to the stimulus of what may best be called an effective spot in the flood of consciousness.[1] What makes the spot effective is a question concerning which physiologists are displaying an ever-growing ignorance. The process is most intricate: it requires the utmost patience and courage to refuse to call a halt and to refuse to

[1] Mr. Bertrand Russell in a recent article says, "I shall continue to protest it was not I who made the world." Sure! But he need not have protested so innocently: there was a time when he came very near thinking it himself. I gladly take this opportunity of testifying that I can see no reason for thinking that Mr. Russell was in any way implicated in the creation of what I have called the infinite context. But I hold him to be entirely responsible for the effective spots he has noticed and also for the names which he gives to these colonies of his mind.

be satisfied . But at the risk of being too easily satisfied, I fancy that consciousness must—at any rate for some time to come—be explained in terms of positive and negative pressure. An apple touched by the sunlight turns red and a sunflower turns round. Apples and flowers may be slow thinkers, but it is hard to escape the conviction that this "turning" has something to do with what they think is the sun. Everything (at present) points to the conclusion that what we call the sun is known to us only because it has an effect *in* us, just as it has an effect *in* apples and flowers. We are all like the dog in Æsop's fable: we think the meat is in the surface of the river: we see the meat in the river and are blind to the meat in our mouths. Fortunately, we cannot drop the meat; we deal in practice with the real piece; but we think we are dealing with the reflection. Hence our little troubles when we argue about cause and effect.

For the moment we must be satisfied that nature is known to us only in effective spots to which we give quite arbitrary but convenient names, as soon as the spot has made its impression on us in the form of a pattern. The name is arbitrary because it cannot matter whether I call a particular pattern a dog or a bow-wow. It is convenient because if I want to order a dog I can count on not receiving a wolf. If I am not satisfied with *any* kind of dog, I shall require a more convenient name, I may even want one particular spot: in that case the name becomes arbitrary and proper. But it is obvious, at least to me, that there is no *logical* difference between the group containing all dogs and the group containing one dog. (I admit there is a difference, and I would be satisfied to call it a *political* difference.) I could, and I do, continue to give arbitrary and convenient names to various portions of the dog, and if it were necessary, I should give arbitrary and convenient names to each of the hairs. This statement may seem ab-

surd in those who are misled by the ease with which we ignore differences—leaving them in what I called the submerged portion of the dog. There is nothing staggering in the idea of infinity: but the infinite difference between two hairs, or two dogs, or any two things which you and I calmly count and call alike, is enough to and does stagger the most robust imagination.

It should now be clear that infinity and dogs, *as such*, cannot be said to exist. We have an effective spot, which, if it fits our pattern dog, *is* a dog. What a dog *is*, is, as we have seen, inconceivable. There appears to be some reluctance to admit that a thing cannot exist as a thing, until some one recognizes it as a thing. When Cain slew Abel, Abel was not a corpse until Cain saw that he was. The case may be illustrated thus: a drop exists in the ocean, but not *as a drop* until it is separated from the ocean. So things exist, as it seems, in the ocean of what we are conscious of, but they do not exist *as things* until we pick them out, until they have become patterns (effective spots). The Great Bear is a pattern that exists only because and if we see it: I have known people who could see the stars, but could not see the pattern. It is also possible—though undoubtedly rare—to be unable to see the orthodox pattern *dog*. Or we may illustrate it thus: in a perfect mirror the reflection would be an exact reproduction of reality: how do we always know that it is a reflection? Because of the border—the limits of the mirror. An image in a mirror without a boundary could not be distinguished from reality. Large mirrors are notoriously deceptive. It is likewise possible to think because our thought has a border or is limited. We know that a thing is "there" in much the same way as we know that the reflection in the mirror is not real, namely, by means of the border which enables us to see that it stands out against an indeterminate context which we can ignore.

In a short essay it is not possible to do more than suggest the outlines of an explanation that might satisfy us to-day. But it may be useful to lay stress on the fact that progress in the past has been seriously hampered by the "knowledge" that reason is responsible for our patterns. I do not deny that patterns can be formed reasonably: it is perhaps possible to consider a decimal point in an entirely reasonable way. But most of our patterns are formed (or informed) by emotion, and the adjectival frame of mind (as revealed by the man who called decimal points "those d—d dots") is very common and quite unreasonable. It seems that reason (which has always been ludicrously overrated by rational and irrational people, just as beauty is overrated both by the fair and the plain) is a very small, perhaps negligible ingredient in thinking. There may be an entirely reasonable way of thinking of mothers-in-law: but sons-in-law have been known who think of "dear granny" in the presence of their children; of "your foolish mother" in the presence of their wives; and of heaven knows what in private in moments of depression. These aspects of the same effective spot overlap, and they run into one another like wet water-colors; the resulting blend is what the mother-in-law pattern becomes—reason being entirely blurred. In the same way, children have to deal with certain effective spots which interest them greatly. They might form quite reasonable patterns, but propriety compels them to form one pattern for public use, and some interest of the type described as analerotic in the blunt, frank language of psycho-analysis, compels them to form another pattern for secret use. The one may be called an "I" pattern, the other a "We" pattern. The combination often produces startling results. We may laugh at a dog's response to the sound "rats!" But his antics are not a whit more emotional than most (I mean *most* and had almost said *all*) of our interpretations of effective spots. We

recognize that no one can explain (to everybody's satisfaction) what is humor. What we admit in the case of humor, we refuse to admit of all things. Yet, just as nothing is humorous unless it strikes us as humor, so nothing is a thing unless it strikes us as such. There is nothing in the sequence "Getting on, getting honor, getting honest" that would help us to decide whether it is a reasonable life's purpose. But there is no doubt whatever that if it strikes us emotionally as being reasonable, it is reasonable. Who says so? *We* say so, or (very rarely) I say so.

I say *very rarely*: I should prefer to say that we are never logically justified in using the first person singular. The ego, about which so much has been so confidently written that one would suppose it had been vivisected, is a palpable fiction: the mischief is that philosophers concentrate on the palpableness and ignore the fictiveness. Nature, in practice, is said to abhor a vacuum: society, in practice, abhors an ego. The few that blossom and bear fruit do so behind the walls of our asylums or prisons. A man is said to be insane if he really uses the pronoun I in preference to the pronoun We. It is psychologically absurd to put a creed in the first person singular. People who really believe in a singular creed are called singular. The ego is not acceptable in the pure state: it is the correct blend of the I and the We that produces the good citizen. Blessed is the man who can truly say that his I and We patterns are the same.

We have said that a pattern must be definite, but only in the sense that "English people" is definite. The composition of a pattern is constantly changing: like the "English people," it may in time consist of an entirely new set of individuals, without ceasing to be itself. A swarm of gnats on the wing is difficult to paint: you may paint in all the gnats with utmost care: you won't be satisfied: you've got

everything except the living, moving *swarm*. You've got the individuals, not the crowd. And though a pattern is composed, as it seems, of single experiences, it is not the sum of those experiences, it is the swarm of them. It is indeed a number of notes, but also a phrase. Its characteristic property is as elusive as the difference between a regular polygon of a very great number of sides and a circle.

Seeing, then, that a pattern is always conceivable, for it is essentially a conception (emotionally conceived), we have still to deal with the question: How do we know when an effective spot fits a pattern? What is the process by which a child in his second year can spontaneously jump to the conclusion that a picture of a cat in a cheap illustrated paper is the "same" as a live cat?

This is a most astonishing feat. I may be conceited, but I sometimes visit picture galleries and I stand wrapped in pleasure at my wonderful cleverness in guessing every object in a picture: and I go out into the crowded street and find I can do it just as well there, although half the objects are moving—. If nobody else could do it. . . . In all seriousness, how is it done?

We cannot in this article do more than paddle on the edge of this deep question. More than a step or two and we should be up to our necks in it. For the moment you must allow me to use the word "expect" without explaining it. If an effective spot appears and I can fit it to a pattern—in other words, name the effective spot—I am succinctly asserting my conviction that it will do its duty. Whatever we think of as a thing is thought of on the basis of expectation that it will do its duty. Being puzzled by a baby's recognition of a "cat" in a very indifferent picture, I tried to discover what duty was expected. I found that the pattern "cat" was, after all, an "I" pattern and not the orthodox "We" pattern, as I had at first supposed. Some

effects, which I thought were unmistakably cats, were ignored: and one effect, which I took to be an engine, was emphatically declared to be a cat. In a few minutes I had satisfied myself that it was *the tail* (or smoke) that fitted the cat pattern: that was the duty expected of a cat—the remainder of the cat as seen alive seems to have been considered (if at all) as an irrelevant appendage. If you analyze what the average Englishman means by Russia, you'll find much the same performance.

Now, why do we expect? In answering this I enter rashly in where physiologists fear to tread. But a tentative answer may convince you that infinity is for most of us a less subtle conception than dog. There seems to be only one way in which we can expect a duty. It is betrayed in every effort to explain the duty we expect of God: namely, by anthropomorphism. We are in the pattern and act as if we were the pattern: hence we know. Sometimes the effective spot does not do what we expected of it and then we give it a new name. A good example of this is the name X-rays given to rays that did what they were not expected to: the name implying that at the time scientists did not know what to expect of them. Nowadays we feel quite confident that we should know how to behave if we were suddenly turned into X-rays—which indeed we are, in a very real sense, whenever we recognize them.

If that is so, it is clear that most of us recognize (or are for a moment turned into) dogs far more often than we are turned into infinity. Hence the duty we expect of infinity is a simple one (for us, not for mathematicians!) compared with the manifold duties we expect from our dog pattern.

To sum up. Whatever the pattern, it is by nature conceivable: whatever the duties expected, they cannot explain, but they must satisfy. There can be no progress, no change in the quality of our knowledge: what was once reported

to be one thing is now officially presumed to be another. What changes is the quality of our satisfaction: what would have satisfied the greatest of our ancestors fails to satisfy thousands living to-day. It is not easy to see why we should suddenly be becoming so rapidly harder and harder to satisfy. It looks like a fever that civilization may die of.

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EVOLUTIONARY NATURALISM AND THE MIND-BODY PROBLEM.*

NO problem is more crucial for a naturalistic view of the world than the mind-body problem. Here the physical world and mind somehow unite in a functional whole. Separate them as much as we will in our abstract thoughts, they refuse to remain separated in reality.

The way in which the mind-body problem has been conceived—both as regards the terms and as regards their supposed relations—has been due to ideas of a very general nature. It has reflected assumptions which for various reasons —to be understood only historically—have dominated the thought of the day. The traditional attitudes taken toward this problem are speculative and bound up with the general bewilderment in philosophy. On the whole, it was assumed that mind and body are existentially separate, and so the question came to be that of their causal relation or lack of causal relation.

The task of the present chapter will, therefore, be twofold. We must show the false premises upon which the old dualisms were founded, and we must render *intellectually conceivable* the functional presence of consciousness in the human organism. We must try to do as clearly as the difficult subject permits what materialistic naturalism

* [Like the articles "The Status of the Categories" and "Space and Time" in the April and July numbers of *The Monist*, the following is taken from a volume on *Evolutionary Naturalism* which we expect to publish next spring. —Ed.]

of the older type with its intuitionalistic idea of knowledge and its lack of appreciation of organization and novelty could not accomplish.

The view we shall adopt in our approach is that the mind-body problem, not being specific in the experimental sense and being entangled with all sorts of conflicting assumptions, is largely a philosophical venture. What is required is a clear analysis of the terms and of our knowledge of them. A point of view must be achieved from which the well-grounded generalizations of the physical and the mental sciences can be harmonized. It is obvious that such an achievement is impossible without an analysis of fundamental categories. The greater part of this work has already been accomplished. Our present task is to apply these results to the mind-body problem.

Such, if I mistake not, is the logical situation of the mind-body problem and the reason why philosophers must have a peculiar interest in it. But if philosophy is to be a coordinating science resting upon, and cooperative with, the special sciences, its interpretation of the problem must reflect the march of events in these sciences. It cannot isolate itself in the old romantic fashion and trust solely to the powers of dialectical speculation. Its hypotheses must spring from the pressure of the general scientific movement and reflect in their growth the point of view and the fertile suggestion which such pressure gives to the creative imagination. But, added to this, philosophy must contribute a clear analysis of the actual content of experience and a sharpened notion of cognition.

Traditional Solutions.—The traditional solutions of the mind-body problem have a metaphysical parentage which goes back to the early days of modern philosophy. Dualistic theories have a Cartesian flavor, while monistic speculations are tinged with Spinoza's postulation of a funda-

mental substance with two knowable attributes. One of the perplexing features of the modern forms of dualism and monism is their vagueness in regard to substance. It is often difficult to determine just how far they continue to retain the Cartesian or the Spinozistic ontology. This very fact shows their weakness; they are compromises between tradition and empirical facts.

Parallelism of this metaphysical temper would maintain that mind is a thinking substance, that is, a self-subsistent entity whose essence is thought. Body, on the other hand, is a substance whose essence is extension. Being, by definition, absolutely different in nature, their relations become meager and practically unthinkable. It will be remembered that Descartes admitted interaction, although he could not really explain it or conceive it satisfactorily.

Spinozistic monism has never been satisfactory because it implies a notion of substance largely outgrown. Substance *as the self-existent* is combined with a logical notion of substance as the *subject of attributes.* But the union in this transcendent substance of the attributes, thought and extension, seems verbal as soon as this logical notion of substance is rejected. Valuable as a development of Cartesianism, it has insuperable objections to face.[1]

Like metaphysical parallelism, interactionism has usually been a dualistic theory maintaining that mind (or soul) and body are distinct existences of alien natures which yet act upon each other in perception and volition. There is hardly less of the old dualistic tradition in interactionism than in parallelism. The mind or soul which is said to act upon the brain is regarded as a substantial entity of a unique sort. It is, of course, this assumption which it has in common with metaphysical parallelism that the evolutionary naturalist will not grant. May not the mind be a

[1] See Stumpf, *Leib und Seele,* p. 16. The objections summarized by McDougall are worth close consideration. Universal parallelism does not have a factual foundation.

term for the integrative action of the nervous system? And may not consciousness be connected up with such action in an intelligible way?

We must distinguish the dualistic type of interactionism, which postulates two kinds of existences, from the empirical, psychological form. Often the psychological interactionist is simply championing the *efficacy* of consciousness and has no clear idea of what, exactly, the physical world is or of the relation between it and consciousness.

When we speak of interactionism, however, we shall mean any position that assumes a metaphysical dualism and still asserts a causal relation between the kinds of reality. Such interactionism has kinship with the soul-theory, and its advocates are usually, if not always, animists and vitalists. Thus a belief in the efficacy of consciousness is not enough to label a thinker an interactionist.

The older theory of the soul made it an immaterial substance underlying consciousness. When Locke made this immaterial substance a permanent unknowable, he gave the soul a shrewd blow; especially so because of his empirical idea of personality and personal identity. Contemporary advocates of the soul-theory for this reason fight shy of the term substance. They do not believe in a transcendent, unchanging substance. *What they do affirm is the need for something other than the body.* As existential theories, parallelism and interactionism agree in this affirmation. And it is, of course, what we are going to attack. Thus interactionism is just a more daring dualism than parallelism. It asserts a causal relation, while parallelism refuses to do so.

Let us glance at some of the difficulties confronting metaphysical interactionism. Physical things are always spatially related, and causality in science implies this background or context. But the soul acts *into* space rather than *in* space. This is the fundamental objection, but there

are others which develop it. First, does not interactionism imply a denial of the constancy of energy? The brain-event acts upon the soul, and the soul reacts; and so the physical system ceases to be self-contained. Secondly, the soul either acts without the need of energy or it possesses its own peculiar and spiritual kind. And yet bodily nourishment affects the activity of the mind. So does sickness. Who does not feel the essential truth of Gissing's reflections: "The very I, it is plain, consists but with a balance of my physical elements, which we call health. Even in the light beginnings of my headache, I was already not myself; my thoughts followed no normal course, and I was aware of the abnormality. A few hours later, I was but a walking disease; my mind—if one could use the word—had become a barrel-organ, grinding in endless repetition a bar or two of idle music." Does not the dualism seem to be an illusion due to some weakness in approach and formulation, to be confusedly verbal rather than real? Thirdly, how does the soul know when and where to act upon the brain to produce desired results? It would seem necessary to assume unconscious knowledge of the minute structure of the brain, and that by something other than the brain. We are thrown into the clutches of the mysterious with a vengeance. Even Bergson with his instrumentalist theory is forced to hold that brain and spirit overlap in pure perception. Fourthly, whence comes the soul? Why does it accompany organisms? Does it assist in the synthesis of these organisms, as vitalism suggests? Do souls have their embryology and development? Why are souls and bodies as fittingly connected as if both had the same heredity? Fifthly, by what right is it assumed that the brain cannot perform those functions assigned to the soul as an imperceptible thing? May it not be that the soul-body dualism of tradition is at work in this conviction that there must be two things instead of one?

The modern exponent of interactionism is practically always an animist and a vitalist. Thus McDougall writes: "It is just because we have found that mental and vital processes cannot be completely described and explained in terms of mechanism that we are compelled to believe in the cooperation of some non-mechanical, teleological factor, and to adopt the hypothesis of the soul."[2] Let us bear this reason in mind. Evolutionary naturalism does not believe that the higher levels of nature are purely mechanical; it accepts critical points with resultant new properties. The struggle between animism and naturalism centers here.

But there are some thinkers who frankly identify the soul with the self as a unitary system of experiences and refuse to admit the necessity for a *thing* with capacities. Yet the difficulties confronting this purely experiential conception of the soul are many. Is the soul intermittent? Can it cease to be, as in sound sleep, and be reborn identical with what it was? What is the basis of retentiveness? Yet we must again admit that this empirical analysis of the soul must be recognized by naturalism. To cover the facts is one of the basic requirements of an adequate naturalism. There is much to suggest that empiricists who are dualists are so as the result of a false epistemology and a resultant underestimation of the living organism. While animists are firm believers in the mechanical theory of the physical world, empirical interpreters of the soul are apt to be naive realists also.[3]

The Empirical Difference between Interactionism and Parallelism.—When we shake our thoughts loose from the older substance-theories and ask ourselves just what the empirical difference between interactionism and parallelism is when these are taken as working hypotheses, we find

[2] McDougall, *Body and Mind*, p. 365.

[3] I am referring to Laird's excellent book entitled *Problems of the Self*.

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that the main divergence concerns the efficacy of consciousness.

Interactionism intercalates mental states between the incoming stimulus and the outgoing motor discharge and so breaks the continuity of the physical series. Strictly speaking, this intercalation is in the brain, so that the mental state, be it image or meaning, comes between two brain-events. To those who object that an image can have no causal grip on the brain of the external or transeunt sort here implied, it is answered that transeunt causality is a mystery which must be accepted.

I have already offered a number of objections to interactionism. To these I would add the suggestion that mental states are unthinkable apart from the body of whose functions they seem to be an inseparable expression. Cannot the mental state be given a setting in the brain of such a character that its efficacy does not involve a discontinuity and action from outside? Interactionism would appear to champion a truth, but to do so clumsily just because it is dualistic.

Empirical parallelism differs from interactionism on two points. First, it asserts a temporal correlation between mental state and brain-event. Every mental state has a correspondent brain-event. Interactionism, on the contrary, regards its intercalated mental states as literally self-sufficient. There is only one *mixed* series instead of two parallel series. Second, parallelism holds to the inefficacy of consciousness so far as cortical events are concerned. The two series do not interact. As I have already suggested, parallelism would appear to champion a truth in so far as the first point is concerned—though this correlation cannot be proved in any direct fashion.

The naturalistic view which I am going to develop has as yet no very good name. It holds to the effective presence of consciousness as a natural ingredient of function-

ing cortical systems. In one place I have called it the unity-theory,[4] but that term expresses only one side of the position, viz., the denial of dualism. From another angle, it can be called a critical development of the double-aspect theory. To the student of mind-body literature, one thing is plain: we ought to shake ourselves loose from conventional solutions; they contain too many assumptions.

Why has Mind been Excluded from the Organism?—Until very recently, dualistic theories have been in the ascendent. The reasons for this exclusion of mind are worth study.

The first reason may be called epistemological. The physical world is the object of scientific knowledge, while consciousness is the seat and means of knowledge about it. This contrast is readily taken to be an ontological contrast. I presume that this interpretation is made easier by the tendency to believe that the very stuff of the physical world is revealed in knowledge of the physical realm. Scientific realism takes the form of an intellectual intuition of things. Thus a naive epistemology is the inevitable generator of a naive dualism. Two realms seem spread out before the gaze of man: the realm of consciousness and the realm of physical things; and it is so easily assumed that they are given in a comparable way. Hence, to say that body has anything in common with consciousness is like saying that black is white. The difference is held to be almost inspectional in type.

The dualism suggested in this way is supplemented by a logical motive. The categories which develop in our knowledge about the physical world are not identical in many respects with those which characterize consciousness. I presume that the one striking exception generally admitted is time. Hence, the two general objects of thought

[4] *The Essentials of Philosophy*, Ch. 22.

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cannot be identical. Consciousness is not simply the physical world, and the physical world is not simply consciousness. It is natural, then, for the logical motive which shows a disparity to be interpreted along the lines of prepossessions awakened by the epistemological motive. It is forgotten that there are other possible existential relations besides simple identity.

The third motive may be called methodological. There has been a working dualism growing out of the data of the sciences. This has meant an ignoring of questions of the nature of consciousness as not relevant to the *content of knowledge*. The scientist's cognitive interest was in the physical world and not in consciousness; and in the world so known through the data of observation he could find nothing which reminded him of consciousness as he understood that term. The point is a somewhat subtle one and to some extent involves the first motive. Consciousness was often conceived as something which could be perceived if it were *in* the physical world. By naive realists—or at least intuitionalists of a conceptual sort—the physical world was thought of as something directly observable; and the tendency was to assume that consciousness, also, was something of like possibility; why could not consciousness be perceived if it were there? Need I point out that the critical realist affirms that this whole argument has no validity? The physical world cannot be intuited, for what we perceive is the content of perception; and the recognition of this situation makes it absurd to seek to perceive consciousness as an object in the sense that the physical existent was supposedly perceived. Even were consciousness in the physical existent, it could not be perceived in the naive sense, for no part of the existent is intuited in this sense.

But still another methodological motive was at work in the science of the past. Let me put the situation in the

following way. Most of us, I imagine, would be inclined to say that there is neither mind nor consciousness in inorganic nature. But science was for many years an investigation of inorganic masses. Only lately have the natural sciences gained a fair measure of autonomy and self-confidence enough to suggest new categories. And if the dominant sciences were physical and chemical and dealt below the level of the organism, it is not strange that the category of mind did not appear as involved in the data and their necessary interpretation. The absence of mind as a category is just what we should expect. And since evolution was not taken seriously, the conclusion drawn was that all phases of nature could be understood without the idea of mind. As we shall later see, behaviorism is unwittingly raising the question whether this be so.

A sort of pragmatic dualism grew, then, out of the stage in which science was. Scientists did not feel that mind and consciousness were relevant to the physical world as they knew it. Reinforce this methodological motive by the epistemological and the logical motives discussed above, and the strength of dualism can be appreciated. Yet, on the other hand, it is not without significance that scientists, when speculative, endow matter with the potentiality of life and mind.

New Tendencies in Science.—Within the last two decades, new tendencies of a genuine interest to philosophy have been declaring themselves. These are, (1) a questioning of the adequacy of the laws of mechanics for any field of nature except that of molar masses; (2) the increased recognition of the empirical autonomy of the various sciences; (3) the admission of creative synthesis in nature with accompanying critical points and new properties; (4) the rise of behaviorism as a physical science bringing human conduct into the physical world.

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The implications of these tendencies are fairly obvious, yet it will be some time before they are frankly acknowledged. I want to suggest particularly their bearing upon the idea of continuity. The emphasis previously was upon sameness. New could not come out of the old. Identity precluded differences. But has not this point of view weakened? Genetic continuity seems to us to unite striking differences. We are confronted with *pluses*. Chemical properties are not the same as physical properties. There is a further plus when we examine the functioning of organic tissues. The older properties are transcended and included. And behaviorism is suggesting that a still more synthetic level is reached in the nervously controlled action of the whole organism.

Evolution seems, therefore, to contain two equally real elements. There is genetic continuity, and there is novelty. Such change is a critical growth within reality. Who has a right to say *a priori* how great a novelty may arise and so set limits to the possibilities of nature? The extent to which this recognition of evolutionary synthesis has come to the front of late is surprising. It means the frank admission of novelty without an appeal to a superphysical agent. But if we accept the effectiveness of new organization, the rather abstract and dialectical choice between mechanism and vitalism becomes a fallacy of incomplete disjunction. A richer and more empirical approach to biology has opened before us.[5]

If totality and self-regulation appear as undeniable features of the economy of the organism, they must be recognized as such. This relevance of data to categories and of categories to data is the foundation of the true logic of science. There need be no fear that this empirical auton-

[5] Though many of Lodge's criticisms of the speculative naturalism of Haeckel are just, his own suggestions are full of a belief in discontinuity of a dualistic type. It would be difficult to connect his view of life with biological investigations. See his *Life and Matter*.

omy of the sciences will involve disorder. Out of it will come a truer appreciation of the working and genetic possibilities of nature than could be fostered by a rigid and doctrinaire mechanicalism.

Lastly, the development of psychology has led to an increased recognition of its biological foundation. If the behavior of an organism is empirically different from that of an inorganic body, this difference must be admitted. Again, there are obvious differences of capacity in the organic realm. Psychology but confirms the rough conclusions of every-day life when it points out differences of capacity in the animal world.

The Thesis of Evolutionary Naturalism.—The evolutionary naturalist desires to throw off the spell of outgrown categories and points of view and to do justice to new tendencies. The thesis which best accords with this ideal is as follows: *The living organism, when properly and adequately conceived, includes consciousness and is the sole source of that differential behavior which distinguishes it from less integrated bodies.* Or, to put the thesis from another angle, I shall maintain that the traditional mind-body problem resulted in large measure from false conceptions of both mind and body. There are delicate analyses to be made and false contrasts to be avoided. And for this necessary work an adequate epistemology is absolutely essential. Nevertheless, a sense of the correct lie of the land is fundamental. And I think that I reflect the contemporary drift when I assert that it is a good methodological principle not to assume a dualism unless there is no help for it. In the main, traditional statements sinned against this principle because they started with two substances, or realities. It will be remembered that Locke hesitatingly suggested that one substance might be enough.

My queries will, then, be as follows: Is not the organism

the object of reference of all the knowledge about it gained by the various observational and experimental sciences, including behaviorism? Do not the contributions of these sciences supplement each other? And is there anything in this tested knowledge which forces us to exclude consciousness from the organism? Finally, what should we mean by mind? Is it the same as consciousness, or is it something bound up with consciousness and manifesting itself in consciousness but yet not merely consciousness? These are not easy questions, but they have the virtue of being fairly specific. If we can answer them in accordance with the drift indicated, the traditional mind-body problem will disappear, to be replaced by such empirical questions as concern the genesis of types of behavior, the varying capacities they reveal, the nature, status and role of consciousness.

Mind as a Physical Category.—Let us disregard the complex and relatively unanalyzed notion of mind usually present in psychologies and systems of philosophy, and see what categories have arisen in connection with the observed behavior of man and the other animals.

The behavior of organisms is interpreted largely as a function of the nervous system. And there are easily distinguished types, or levels, of nervous action and its correlated behavior. Reflex action is stereotyped and seems to involve a particular nervous group, little controlled by the whole nervous economy. Instinctive action is much more complex and mediates many stimuli, together and in succession. It involves the coordination of a series of actions which are in themselves partially reflex; and yet there is more of plasticity and totality in it. Instinctive action shades into intelligent behavior in which there is "learning by the past," selection, and even planning. Such behavior displays intelligence. This ability to meet situations in a

non-mechanical way through the capacities of the nervous system is the empirical fact which behaviorism stresses. And behaviorism is as much a physical science as is chemistry.

It is becoming customary to speak of intelligent behavior, and to regard mind as a term for the internal processes of the organism which find expression in the overt characteristics of bodily action as examined over a reactive period. Where we have these internal processes we have mind. The recognition of this situation is often expressed by saying that we know what mind does or how mind functions, but that we do not know mind itself. But this form of statement implies that mind is a substantive thing not revealed in its conduct. It also assumes an ideal of knowledge which we have attacked all through these articles. And, besides, is it not truer to the empirical facts, and simpler, to say that in instances of intelligent behavior we know how the organism behaves and that, until the contrary is proved, the conditions of this behavior must be assigned to the organism? Is there anything in the facts which demands the assumption of *two* objects of knowledge? My conclusion is that knowledge of what mind does is really knowledge about the organism. The burden of proof rests upon dualism.

If, then, we use mind as a physical category, we should mean by it the nervous processes which find expression in intelligent conduct. The mind is the brain as known in its functioning. It is the brain in its integrative capacities. All the physical sciences give knowledge about the brain, but they do not give the same knowledge. Their propositions are supplementary rather than identical. One of the tasks of evolutionary naturalism is to show how they can be harmonized when once evolution is taken seriously.

The bearing of this approach upon the mind-body problem is readily seen. In so far as mind is a physical category

growing out of the data of observation, there is no mind-body problem.

Suggestions in Favor of Evolutionary Naturalism.—But while there is no mind-body problem in the traditional sense, when this method of approach is adopted, the nature and origin of this non-mechanical behavior becomes itself a subject of inquiry, all the more acute because specific. As long as the abstract, mechanical ideal of explanation, an explanation by reduction, ruled thought, the postulate maintained was that organic behavior could be reduced to a complex series of purely positional, or unintegrated, motions. A physical system was assumed to be nothing but the sum of its parts and their external relations. Organization counted for little. But to-day this postulate has been weakened by the growth of the biological sciences. It is, to say the least, just as possible that a system is more than an external sum of parts, that it is an organization in which the whole exerts a control over the parts, that the resultant is a function of the system.

But if these new tendencies are accepted, their implications must be worked out. The implication which I have constantly stressed is the forced admission of levels of causality in nature expressive of organization or creative synthesis. In other words, the empirical data force the thinker to construct categories corresponding to them, categories continuous with the old, and yet obviously striking a new note. Thus the mental level in nature is the level of intelligent behavior—of which, of course, there are degrees. Mental processes are brain-processes, and these control and express themselves in behavior.

Added knowledge about Organisms.—The behavior of individuals must be enlarged to include gesture, facial expression and language. Such data of observation are pe-

culiar because they are interpreted by the observer as symbols of inner states of consciousness to which he cannot otherwise penetrate. This act of interpretation is instinctive in its foundation and carefully cultivated because of its value. We should note, further, that there is an agreement between the overt behavior of the organism and the meanings of these symbols of expression and language. A says that he is going to the Campus, and I find that his body moves in that direction.

Overt behavior consists of the movement of the whole body or of a part in response to a stimulus or a situation. This second kind of behavior is not a physical adaptation like an animal's serial actions, but is social in its intention. It is essentially a communication. Let us see what it communicates. But first let us note that these words and gestures and facial expressions are symbols to us because we know, or think that we know, what they mean. Their meaning is, therefore, a part of the objective datum. A shake of the head means the feeling and idea we have when we say no.

The second series of behavior-data offers us a knowledge of the mental states of the individual who is communicating with us. Note that I say knowledge and not participation in. What we do is sympathetically to reproduce the mental state of our communicant, that is, we produce the meaning of the symbol. In the case of gesture and expression, this production is a trained reaction in which we sense an identity between our experience and that of the other person. We may call this a sufficient identity of *content*—with which alone we are concerned. In the case of words, we understand his statements and say that we know what he means or feels.

This added knowledge of the organism gives us an increased grip on mind. We said that for the physical sciences mind as a category covered the character of the

cerebral processes which control and find their expression in overt behavior. But now in these data of behavior which are symbols we gain knowledge of ideas and feelings which, combined as desires and plans, precede the behavior as apparent control of it. We are led into a deeper knowledge of mind. But a knowledge which raises perplexing questions.

The Epistemological Situation.—We must be careful to keep the epistemological situation clear if we are to thread our way through the coming difficulties. Let it be remembered, first of all, that all knowledge arises and exists only in the consciousness of individuals. The other point to remember is that there are at least two general kinds of knowledge: that which terminates upon data and is their interpretation by means of concepts, and that which uses interpreted data as material for knowledge about objects outside of the knowing consciousness. This latter kind of knowledge, which we have frequently called referred knowledge, divides into two sorts: (1) information about things of the type *founded on the characters of sense-data*, and (2) knowledge of the contents of other minds *through the mediation of symbols.*

In the case of another person, the knowledge gained in the various sciences is information about the organism of the sort mediated by the character and relations of sense-data intelligently handled and interpreted. This other person is an organism independent of the knowing individual; while the sense-data, interpreting concepts and propositions, are a part of the consciousness of the knower. We have seen that modern knowledge of the brain is beginning to lead to a realization of its structural and functional complexity. Organization is being recognized as an important feature of particular substances, and surely the organization of the brain is its paramount character:

Upon the organization of the brain which we call the instincts, there develops a still subtler and more plastic organization of habit and idea. Something of this sort is the information we possess of the functional texture of the brain.

Knowledge of the content of another mind is assertion of identity of content under the guidance of symbols. My feeling is enough like yours to be identified with it contentually. When you *look pleased,* I read into you vaguely my experience of pleasure. When you use certain words, I interpret you as having the same meanings in your mind that they suggest to me. How constant and unremitting our testing of this assertion of identity is! Ultimately, I presume, it rests upon correlation of behavior and meanings. If you say one thing and do another, you are either a liar or these symbols do not have the same meaning for us both.

We possess, accordingly, two kinds of knowledge about another's mind. How can these be harmonized? We admit that assertion of identity of content comes nearest to a literal participation in the reality known. Information-about, as critical realism insists, does not involve the presence of the physical reality in consciousness; and knowledge of content does not require the givenness in the knower's consciousness of the mental state known.

Another point. The situation in regard to another is essentially the same as that in regard to our own self, in all that concerns the mind-body problem. We know that another has a stream of consciousness; we experience our own stream of consciousness. We have information about his organism and essentially the same information about our own.

The Relation between Consciousness and Brain.—Mind has been an ambiguous term somehow felt to cover cere-

bral capacities, subjective operations and the changing content of consciousness; and as long as consciousness was thought of as alien to the organism *qua* physical thing, mental operations tended to be loosened from the body in sympathy with it. Not until consciousness is seen to be included in the brain will the term mind cease to be ambiguous and the age-old problem vanish in the more adequate conception of the living organism.

What, then, is the relation of consciousness to the brain? And how can we insert it into those cerebral processes which control intelligent behavior? Can mind as a category of physical science coalesce with mind as an appreciation of what takes place in consciousness—recollection, reasoning, valuing, planning—into a deeper knowledge about the content and operations of the brain?

There are, then, for the critical realist cortical processes which control and find expression in behavior; and there are conscious processes which apparently have a similar relation to behavior. We can only have information about the cortical processes, while we can either experience (in the case of ourselves) or know (in the case of others) conscious processes. How shall we conceive the relation between these two?

Empirical parallelism stresses what may be called a temporal correlation. The events in one series are temporally correlated with the events in the other series. Historically, this empirical correlation has passed through two stages and is just entering upon a third. The first stage may be called psychophysical correlation. This formulation was characteristic of the time when the brain was dogmatically conceived as a kinetic mechanism. The correlation could be only temporal because the two series did not have even a common form. What in consciousness could correspond with an atomic movement? The second stage may be designated psychophysiological correlation.

It stressed the temporal ordering of mental states with complex physiological processes. It was a psychochemical correlation in theory.

The third stage is just being entered upon. It is difficult to select a term descriptive of it. What is emphasized is the fact that the brain has functional "sets" and that a pulse of consciousness should be correlated with such a "set." What it stresses is the natural correlation of functional unities on both sides.

Thus temporal correlation is being supplemented by what may be called both formal and functional correspondence. There is an agreement of method between the conscious processes and the cerebral processes. Corresponding to association is the connection of neuronic groups; corresponding to the compresence of various sorts of sense-data is the cofunctioning of various subsystems; corresponding to meanings is some sort of process of summation. These correspondences have not been traced in detail because of the almost insurmountable difficulties on the technical side. Let our ignorance be admitted. Yet it holds even more fully for the older kinetic interpretation; and such knowledge as we possess indicates a far-reaching agreement in the principles characteristic of the two objects of study. The two domains harmonize in a way that suggests that they cannot be external to each other.

If these conclusions be admitted, the evident next step is to ask ourselves whether there is any sufficient reason why the flow of consciousness cannot arise literally in the brain as a part of its functioning. I have elsewhere sought to canvas the customary reasons for the exclusion of consciousness, and need here only repeat my conviction that they are founded upon misconceptions.[6] Critical realism undermines natural dualism with its vague assumption that we possess an intuition of the very stuff of the phys-

[6] Cf. *Critical Realism*, Ch. 9.

ical world that makes the presence of consciousness almost a logical contradiction. Of course, we cannot pass from our information about the physical world in any of its parts to an inference of any conscious content. But why should we expect such an impossible transition? It is an epistemological absurdity.

We have information about the brain, but no apprehension of the stuff of the brain, that is, no intuition of what physically *is,* no complete vision of its contents. Consciousness is a term for data which are open to inspection and analysis. Of it, alone, do we have a revelatory acquaintance. It follows that the *setting* of consciousness in the brain cannot be given. In other words, by the very nature of the case, we are precluded from witnessing the ontological linkage of consciousness with the being of the cerebral processes. Picture-thinking will not help us and is apt to lead us astray into patent absurdities. The situation is unique.

The Nature and Function of Consciousness.—Interactionism of the traditional type makes of consciousness a self-existent substance which externally acts upon the neural processes. Descartes's crude theory has given way to a mystical, because unintelligible, idea that consciousness affects the neurones at their synapses in the way of heightening or lowering resistance to the passage of a nervous current. But such an action in any plan must needs be very complicated. It would be like the playing of very many notes at the same time on the keyboard of a piano. It would seem much more likely that the cortical pattern in its entirety is a growth which is changed here and there under demand. It is more like the synthesis of modes of functioning, genetically developed, than like an action from outside.

The efficacy of consciousness must be relative to its

nature. There are those who can conceive of consciousness as having efficacy only if it is a form of energy. But energy is only a term for certain quantities in our knowledge about the physical world. I think that there is much plausibility in speaking about mental energy as a term descriptive of mental capacity. Thus those whose personality tends to dissociate are said to lack mental energy. But are we in these cases thinking about consciousness alone, or about it in its setting and conditions? I am persuaded that the latter is the case. Consciousness is inseparable from energy changes, but I do not believe that we are speaking critically when we say that consciousness is a form of energy.[7]

If consciousness is not a form of energy but just what it is given as, we must seek suggestions as to the character of its efficacy by a study of its conditions and its apparent function. Here we have an instance of real or ontological causality; we seem to be on the inside of nature as participants. Moreover, if our appreciation of the new tendencies in science is correct, consciousness is the correlate of cortical systems and not of particular cells as units. It has too readily been assumed that there was only question of efficacy of an impact type. But consciousness does not reveal the slightest basis for impact in its content. It is not a physical thing and cannot perform the operations of a physical thing.

What does experience suggest the probable function of consciousness to be? If this function accords with its nature, we should be on the track of the mode of efficacy of consciousness. To answer this question we might study the process of motor learning or reflect upon cases of action after deliberation. In the first type of case, it seems clear that some sort of ordered fusion is facilitated by conscious-

[7] It is better to speak of mental energy since energy is a category of physical science.

ness. It plays about growing points of integration. It seems to aid the growth of a complex system in which the parts touch one another off. We would appear to be to a slight extent on the inside of a process of synthesis. The organism on its nervous side functions as a whole in adjustmental reactions to its stimuli. Such reactions are by their very nature synthetic, and not physiological in a discrete sense. Percepts are peculiar expressions of the reaction and, by that very fact, cues which can represent it. I judge that the sensory content has the individuality of the system in which it has its roots. The one is as singular and specific as the other. But learning involves attention, and attention implies an organic interest and a larger system than the nervous basis of the sensory content. It is in and through the attention-system that conscious learning develops. And if this system has its conscious aspect or level—its focal rise into consciousness—it is not unlikely that its process is furthered thereby.

In action after deliberation, we have a conscious process of active selection in the light of ideas of consequences, all being guided by purpose and mood. And our decision certainly takes the form of a plan which appears to guide action and assuredly corresponds to our behavior. Hence our natural belief is that this conscious process counts for something; that, without it, intelligent behavior would be impossible. Are we justified in this belief? If consciousness is an internal complex of contents, sensory and affective, which are determinate reflections of the set of functional systems in the cortex under the play of intra-and-extra-organic stimuli, it may serve as a guidance or it may simply reveal the course of cortical processes. The one view is in sympathy with what interactionism has desired to defend—although blunderingly; the other view is analogous to epiphenomenalism.

In this dilemma, I accept the position that consciousness

is efficacious, that it has a function to perform. It seems to me to be a natural ingredient whose function is to aid in the solution of problems by the cues it affords. Literally, it assists the brain to meet new situations. The brain is coordinative, and consciousness is at once the expression and the instrument of that coordination. Planned action involves a changing system of great complexity in which there is an ordering of elements to one another. Consciousness does not link molecules, for that would be to materialize consciousness, to make a physical thing out of it. To put the suggestion bluntly, it is just because consciousness is not itself a physical substance, not a substance at all in fact, that it can be the focus of functional totality and guidance. Thus, out of an apparent dualism, we can achieve the thought of a more adequate monism which does not ignore differentiation. It is absurd to deny that consciousness is as we experience it. The fault with the traditional dualism was that it made consciousness into a substance coordinate with, and external to, physical substance. It is a unique variant expressive of the shifting unity of a highly organized system. It is, as it were, the eye of that system. Critical integrations must be intelligent if they are to meet the requirements of the organism. But we cannot understand their intelligence unless intelligence is actually at work within them as a part of their nature. In thinking, planning and desiring—in all those conscious processes which we call activities—we are on the inside of the brain and at its focal level of operation. Here objective and subjective activity are identical.

Advantages of this Theory.—If consciousness is at once the conditioned expression of the cortex and the instrument through which *operations* such as discrimination and anticipation are carried on, we can readily meet the traditional objections to the efficacy of consciousness.

In the first place, energy and its measurement applies to the whole cortical system. It is knowledge about the brain. Interactionism at least tends to make consciousness a substantial system external to the cortex and, for that reason, is confronted with the principles of science which assert that the physical world is a closed universe.

In the next place, our view takes the sensori-motor process as a unit and holds that the cortical integration of which consciousness is an element is always genetically continuous with a motor pattern of the brain. In other words, cortical integrations arise in one system with motor tracts. This means that ideas are from birth immersed in neural processes which have motor extensions. Ideas and motor tendencies are always on the same circuit. A dominant idea means a dominant cortical system, and such a system possesses its genetically developed roots. Behavior is a growth from instinctive tendencies to action; and it is within such instinctive functioning that conscious action appears. A purpose is, thus, a part of an active system which has its trained expression. Hence, in the brain itself, purposive idea and motor expression are only stages in a continuous neural process. Or, to speak even more exactly, the integration of the idea is at the same time the integration of its motor prolongation. But because only the idea is *given* to us we are prone to erect a dualism and to ask how the idea by itself—which we forget is an abstraction from its ontological setting—can *produce* what follows.

We are forced to conclude that the relation of consciousness to the brain is internal and unique. It is a relation which can be understood in some measure only when a correct knowledge about the brain's method of action is added to a proper conception of consciousness. Only then can we, as it were, see consciousness as immersed in, and continuous with, brain-systems in action. Had not M. Berg-

son been led astray by his sharp dualisms between space and time, spirit and matter, I feel certain that he would have reached such a view as ours. He suggests almost an identity of brain pattern and perception as a basis for the insertion of spirit into matter—from the outside. But for him the higher levels of consciousness cannot have this material matrix. It is impossible ultimately because duration is so different from space. But to us his argument is dialectical and not empirical. The physical world is not merely spatial. His theory of the categories and of the nature of the physical world makes an evolutionary naturalism impossible to him and causes those dualisms which characterize his cosmology. A correct analysis of the categories is thus seen to be fundamental.

Consciousness and Mind.—It has been our admitted purpose to get an adequate idea of mind which will harmonize the information gleaned by behaviorism with that accepted by introspective psychology. We should now be in a position to accomplish this feat.

If mind is a term for the nervous processes which find expression in the differential behavior of the organism, then objective psychology gains valid knowledge about the capacities, tendencies and general mode of operation of mind.

But if consciousness is at once the expression and guide of mind, changes in contents should indicate the activity of mind. For instance, an act of comparison is a process in which contents are correlated and brought synthetically together; and such an act is the function of some *interest*. We can find no creative agency in the contents of consciousness as such, but we do feel that they are present in and aid a genuine activity of the personality. They are elements in those selective and dynamic complexes which we call instincts and desires. The brain as mind is a more or

less integrated system of propensities and interests which respond to the situation in which the individual is placed. And such interests must not be thought of as physiological in any sense that excludes discriminative appreciation. They are neurological systems whose urgencies are inclusive of mental contents.

Consciousness must be connected psychophysically with neural processes of some reach. Attention, itself, can be understood only as a forward movement or passage in which the cerebral activity makes its path. What we must seek to do is to deepen our conception of the brain as at once activity and content. It is sensori-motor, ideo-motor; it is a stream of tendencies lit up by consciousness. The brain is synthetic because it is active. It is a more or less unitary process controlled by the neuronic system which is functionally uppermost. It is hard to describe what the reflective mind feels, that personality is like the deep heaving sea with its currents and counter-currents. It is the pressure of this complex, internal immensity that we call interest.

Our conclusion is that consciousness is a part of mind but by no means the whole of mind. It is too evanescent and passive, too little self-explanatory, to be so considered. It is relative to an organism and to that organism's activities.

If the arguments of this chapter stand firm, we have established the thesis that the living organism, when properly and adequately conceived, includes consciousness as a characteristic, internal feature of the functioning, neuronic system. It is a quality of a novel whole, and is as novel as the synthetic whole of which it is an expression. I have frequently called it a variant to bring out its existential correlation with a complex process. The field of experience of any one time is a *psychical structure* which corresponds to the activity of the organism. This correspond-

ence we have tried to explain in connection with perception as a neurally mediated activity.

When I conclude that any psychical fact is a quality of a nervous complex when functioning synthetically, I do not, of course, use quality in the sense of naive realism. The brain is not red when the psychical entity, red, arises in it. The use of psychical entities as the material of knowledge, while the object of perception is confused with the content of perception, gives rise to this misinterpretation of the psychical content. This problem involves the category of quality which we have discussed in an earlier chapter.

Psychical entities are not substances, but rather peculiar characteristics of novel wholes and inseparable from them. As soon as such psychical entities are thought of as self-sufficient things, dualism breaks out and they are extruded from the brain by our thought. As soon as they are conceived as more than contents, as more than they themselves reveal, as soon as they are given *by themselves* power to do things, they become to the deceived thinker non-physical and alien to physical reality. And it is very difficult for one to avoid these errors unless he is master of an adequate epistemology which has clearly seen the fallacy of naive realism.

Psychical entities are, then, contents which arise in the synthetic brain, and they are aids in the discrimination and correlation of objects. In terms of such contents acts of memory and anticipation clothe themselves, all this proceeding in the brain as a natural part of its adjustmental function. The brain has been underestimated in the past in behalf of a hypothetical reality postulated to perform functions rather dogmatically asserted to be impossible to a physical organ however delicate its structure. In contrast, we have argued that the brain is rightly conceived only when we supplement all the knowledge gained by the

physical sciences about it by all that the mental sciences can teach. It is literally the brain-mind, the home of consciousness and of mental capacities.

Panpsychism and Materialism are Extremes. — The evolutionary naturalist desires to combine the total information he can gather about the human organism. He knows himself to be an evolved substance of tremendous complexity whose material is that which he consumes each day in food and drink. He thinks, acts, adjusts himself to complex situations, ministers to his body, experiences fatigue, has sicknesses, etc. *That is the kind of a thing he is.* He is all of these cooperative functions at one and the same time. And yet the conscious self sits quite obviously in the watch-tower of the brain to guide the organism's behavior.

Materialism builds its outlook upon the conclusions of the physical sciences, and, naively taking this knowledge to be exhaustive of the organism, can find no room or function for consciousness. We have tried to correct this mistake by pointing out that in consciousness we are on the inside of the organism, or, to speak more correctly, are a literal part of the organism. We have also found that mental contents function in a guiding way in those operations of discrimination and correlation which the brain performs. Our conception of the brain has wonderfully enlarged as a consequence.

Panpsychism, on the other hand, starts from consciousness as something we are sure of and seeks to conceive it as capable of fitting the demands of the physical sciences. Much of past panpsychism was idealistic in its epistemological setting and so lightened its task. But for us panpsychism must make plausible the structure of the brain and the massive properties and relations of the physical world. Mental contents as I am aware of them or as I introspect them seem to me incapable of bearing this bur-

den. The contents of consciousness are correlative to neural processes which are not to be found at the inorganic level. They apparently come and go and are not directly conserved; there seems to be nothing more to them than is open to inspection. In short, they are not substantial and dynamic.

But I do not hold that mental entities must be objects of awareness in order to exist. Unconscious consciousness in the sense of psychical entities of which we are not aware appears to me to be no contradiction. Awareness involves a structure within a process of attention. The reason why the idea of unconscious consciousness has so often seemed absurd is the double use of the term consciousness which will be discussed elsewhere. But I do not see any adequate reason to believe that psychical entities of which we are aware differ markedly from those of which we are not aware, and *vice versa*.

To the panpsychist's objection that he is unable to understand the origin of the psychical from the non-psychical, the natural reply is that the physical world is not the non-psychical in any dialectical sense. If the psychical is novel, it follows that it could not have existed before. Consequently, we have on our hands only the general question of the origin of the novel. But is not the organism with its capacities novel? And why should not such a novel whole be accompanied by novel creations in the tensional adjustments involved? My own mind is not shocked by such a theory. It does not quail before a real, though a conditioned, beginning. Let him who feels otherwise show how a simple quality like red is the genetic product of something simpler. Frankly, it seems to me that there is novelty of an undeniable sort at every level of experience. Yet I hold that these novelties have their cerebro-mental setting and conditions.

To conclude: the epistemology of materialism is too

naive, and it founds its interpretation too exclusively upon the inorganic physical sciences. Panpsychism, on the other hand, builds too exclusively upon mental contents because these are the only entities literally given to the conscious self. It has generally been connected with idealism. But when it admits the validity of a critical realism, it has so many difficulties to face in making the psychical the equivalent of the physical world known by science that it ceases to be very plausible.

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MYSTICISM AND ART.

ONE of the most significant facts in the problem of modern life, and the most difficult to handle, is the many-sidedness of Western civilization. Every view of art, every commercial enterprise receives all the emphasis that the passion and individualism of genius can give. Each of the innumerable and brilliant facets of life acquires a prominence and makes a demand often compatible only with the oblivion of all the rest. In particular, it is a world where art most readily appears as a gilded or somber fantasy without reality and truth; and science no more than the separation of the mind from an external nature—a sense of mastery, without recognition of the alienation which is its price. But the moral nature of man appears to have suffered as deeply as any part of him, and become barren, alike because of overemphasis and because of isolation. Science, in spite of the enthusiasm and genius that have been poured into it, has not known the sphere where it could really serve a true social idealism; while minds of high ethical passion are too completely represented by Tolstoy who had to misinterpret his own experience and empty life of some of its greatest treasures before he could see it according to the light of his keen but narrow vision.

But many-sidedness need not be weakness. Is there any principle by which an epoch like ours can reap the fruit of its labor in science, philosophy and art and make them serve for wholeness and strength without losing the

value of their individuality and intensive development? It seems possible that there is, and this possibility we shall meantime discuss from the point of view of art.

It may seem strange that a generation esteeming itself enlightened through the achievement and the discipline of scientific thinking, and disillusioned through its disastrous encounter with an insulted and apparently revengeful universe, should seek refuge in mystical modes of thinking. But whether or not the mystical inclinations of to-day have borne any real fruit, it is just through the bitter experiences of knowledge and enlightenment and disillusionment that sometimes in the past men have transformed these self-same things and set them upon a higher plane. Our hope must be that they should do so again. For as on the plane of practical activity, they find the results of their science terribly disappointing, being deprived of the convenience and order of their economic systems at the very points where they had expected to gain most by them; so in the sphere of purely scientific or philosophic thinking there is a parallel dissatisfaction, a discovery that thought is deprived of the satisfaction that seems due to it—a profound and intimate contact with the world whose nature it had set out to learn, and whose problems it had determined to solve. This disappointment is, of course, old as the history of thinking humanity. But it is none the less acutely felt in an age where reflection is keen and critical as ever and pursued with more help from the accumulated results of past experience.

To start from the point of view of the thinking instinct itself, what are the remedies that thought proposes or seems inclined to adopt to free itself from the tyranny of its own criticism? In the first place, there is the instinct to forego thought altogether, to give up, to find refuge in some non-intellectual form of experience. And this movement gains the assent of thought itself. For it lies very deep in

human nature, and is not by any means symptomatic of shallowness or poverty of life, to declare that thinking is in vain, at once painful and fruitless—and that there are other things in life, love and pleasure, that if they be not better than thinking in so far as they seem to be as barren of ultimate fruit, have yet a kind of transitory profitableness in them, and being good while they last, have all the goodness that is anywhere available. Now there are numberless ways in which this reaction of thought from itself may take place, and the reflective judgments that are made about it are correspondingly innumerable.

But one of the most interesting modes of reaction of the mind against itself is that from thinking to the enjoyment of beauty in art. It is perhaps so interesting because of the conviction that things of beauty differ *toto coelo* from the process and results of thinking and are, to the extent of the difference, so far further along the road to lasting joy. Music, in particular, to so many severely scientific thinkers, seems to offer such a refuge from thought—from its demands and from its dispeace. Experience is, however, unable to maintain itself at this degree of tension. It has been found, for example, impossible in practice for the thinker altogether to stop thinking. And in those lapses back into thought, he is conscious of new discoveries. One of the most startling of these is that art even in a form so remote from reflection as music seems to contain, not indeed, thought, but something that is recognizable and thinkable only as a strange transformation and transfiguration of thought. But whatever insurmountable difficulties the mind may encounter in its attempt to give this mystery a name, it comes without hesitation to the conviction that it could not have come there without thought.

Sometimes the result of this discovery is to make the intellect start out afresh. It takes a new notion of itself. But it may equally well be that artistic experience of how-

ever high an order pays what appears to be the inevitable penalty attaching to any part of life whenever it is lived in isolation—dissatisfaction with itself. It may be questioned whether the genuine artist ever feels the parallel dissatisfaction in his work that the thinker does in his. And yet, consider how the very greatest artists seem to have been under some kind of necessity of passing out of their own proper sphere of art—like Michelangelo—and finding some other means of utterance, as in poetry. Michelangelo's case is indeed one of extraordinary significance. For here the real interest lies not in the mere fact of his versatility, but in the inner dialectic of his mind which leads him in some sense to renounce one medium of expression after another. Especially significant are those renunciations of graphic and plastic art which are the burden of some of the later sonnets, and of the most passionate of these. It is clear that in such, poetry scarcely appears to him under the aspect of art. In his prayer for "the hatred of lovely things," or in his complaint that "neither painting nor sculpture can any more give rest to the soul that turns to the Divine love," he does not know, or he forgets, that this renunciation of art bears both the form and the spirit of artistic beauty. Even Rodin, reviewing his own work in the light of his master's, forgets this too. "He was satisfied with art no longer. What he wanted was the infinite." But why then did he return to another form of finite artistic expression? Perhaps, however, the significance of Rodin's criticism lies in its being a movement of pure reflection, the sculptor's critical reflection about his own art, the final stage of a dialectic that begins in art and ends in thought. If this were so, it would follow that the mind would be driven back upon thinking for its full satisfaction even after the intensely emotional experience of beauty.

But, for all that, the radical defect of thought would

remain; and yet, because of its richer experience, the mind will think in a new way, and with new views of its own thinking-process and of the results of its thought. The paradox within which it will find itself moving will be something like this. Thought is forever inadequate to achieve the perfect comprehension and the deep and intimate penetration that it desires of the world which it sets out to know. The mind's very act of bringing precision into its aim shows it at once that this aim demands the clear recognition of the distinction between mind and the world which it knows and the need forever to maintain this distinction if thought is not to deny itself, render futile its own movement and stultify its own effort; while yet the very ground of its aim is the aspiration to rise above the distinction. The driving power of the mind is at variance with its method of procedure. The will to know is in contradiction with itself.

However we are to formulate the solution of this antinomy, there is actually an experience by which in some sense it is achieved. The point is reached where thought can no longer take refuge from its own dissatisfaction with itself by passing outside itself, as, for example, into art. It is now compelled not so much to relinquish itself as to transform itself while yet maintaining itself. This is the experience of mysticism.

The distinction, then, from the point of view of the thinking-process, between mysticism and such other forms of intuitive experience as we have typified, say, in music is quite clear. As opposed to the movement by which thought abandons itself and compels the mind to fly for refuge to the emotional and to the sensuous, mysticism is the demand which thought makes upon itself to reconcile its aim with its method, and heal the wound which the falling apart of the two is forever inflicting upon the mind.

In adopting this mode of statement I find myself at

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issue with certain views of mysticism, such as Mr. Russell's in *Mysticism and Logic* which, though they give it the fullest sympathy, yet regard it as something external, and in a sense, alien to scientific reflection; and which must therefore be brought into harmony with it. But if mysticism comes to birth within the thinking-process itself, and is not something added to it from some other source, its contrast with science as in some way antagonistic is like the unreal contrast of genius to the patient and laborious work out of which its swift illumination arises, and which is, after all, the only soil that it can spring from. In all kinds of intellectual work, there is no doubt a certain strange transition from the merely laborious and painstaking to the brilliant and creative. It shows itself equally in science, art and philosophy—probably in far wider fields than these—but in these for certain. In philosophy it shows itself in the transition from scientific reflection to mysticism. But in thus placing mysticism in the sphere of genius, it does not mean that we are not free to recognize philosophical genius that is not mystical. For there are types of scientific and philosophical thinkers of the very highest order who have little or no mystical tendency. So that philosophy at its best would really provide us with two distinct, and possibly divergent, lines of development. On the other hand, starting from the idea that the mystical tendency is a true development of scientific or reflective thinking, we should hesitate to identify it with intuitive forms of experience like poetry and art, or at all events reject as untrue or insufficient an explanation which merely explained it through these as forms of intuition in general. Mystical thinking, in fact, stands out in strong contrast with art.

There is a difficulty of the same kind in a quite different order of experience from that of knowledge. It is very easy to accuse our own age—the epoch of the war—of

destitution in art and of indifference to beauty. It is another thing to gauge the truth of the charge. But however it may be, there is something in our present surroundings, in the economic and material conditions of modern life that makes us peculiarly alive to this difficulty—that while we most earnestly desire the presence of beauty, or the existence of arts that could profoundly interpret the character of the times through which we have been passing, there is no way by which beauty can directly be willed or by which art can immediately be produced, however great the desire. If we enlarge our point of view a little, and, instead of restricting it to what we suppose comes under the narrow categories of beauty or of art, consider the wider range of human experience that is represented in the old Greek view of τὸ καλόν, the nature of the paradox will become clearer. Τὸ καλόν, or what is noble, will include the moral life of man on its esthetic side. It is not merely pictures or poetry that can be beautiful in this sense, but character and action. Now it is plain at once that nobility of character, or even of particular actions, cannot be directly willed. The discipline that may produce it can, but not the aspect of beauty that belongs to it. Of this kind of beauty or nobility it is even necessary that it should not enter into consciousness at all, otherwise it defeats its own end. Or, if it ever does appear as an end of action, it must be completely lost to view in the action itself and in the motives to action. And yet the moral life would lose something, or would be wanting in an essential element, unless it could ultimately be contemplated in this way. It must always be possible in the end to view self-sacrifice as a fair or noble thing.

In this kind of experience, then, we find the same, or a parallel, difficulty of reconciling two essential moments without which the whole experience is not complete. There is the discipline which excludes consciousness of moral

beauty in action, and there is the recognition of this beauty as an essential factor in moral experience.

And now let us approach the narrower problem of art.

Beauty—and I mean, in particular, sensuous beauty—is one of the things that like truth and goodness is valued for itself alone, and not for something else that it will bring or that it will help us to achieve. But there is this profound contrast, that while the latter can be sought for their own sake, beauty in art is not a thing that can be had for the seeking, and it is even possible that the seeking hinders the finding. So at all events has been the conclusion reached by some of the ablest thinkers about art. Guyau in France, for example, and Ruskin in England held that great art could only be produced under the influence of some religious or ethical motive; and that what really mattered was the intensity and sincerity of that motive, and not the desire to do artistic work for its own sake, or to make the discovery or the production of beauty the principal aim in life. Ruskin elaborated this doctrine with great earnestness and with a consistency of thought that seems to escape those of his readers who take him to be merely a brilliant writer, or who imagine that all he has to give is given as it were intuitively and without logical coherence. On the contrary, he scarcely ever deviates from this view; and however much antagonism he may arouse by the particular means he uses to illustrate it, there can be no doubt about his main conviction. The clearest expression of the principle is perhaps that in *The Oxford Lectures*. "The entire vitality of art depends upon its being either full of truth, or full of use; and that however pleasant, wonderful or impressive it may be in itself, it must yet be of inferior kind, and tend to deeper inferiority, unless it has clearly one of these main objects—either *to state a true thing*, or *to adorn a serviceable one*. It must never exist alone—never for itself; it exists rightly only

when it is the means of knowledge, or the grace of the agency for life." And again this, of great expressive power, is perhaps more characteristic. "I saw more and more clearly that all enduring success in the arts, or in any other occupation, had come from the ruling of lower purposes, not by a conviction of their nothingness, but by a solemn faith in the advancing power of human nature, or in the promise, however dimly apprehended, that the mortal part of it would one day be swallowed up in immortality; and that, indeed, the arts themselves had never reached any vital strength or honor but in the effort to proclaim this immortality, and in the service of great and just religion, or of some unselfish patriotism, and law of such national life as must be the foundation of religion."

And though we may not agree with much that has been written in the same strain about art by these and other writers, there are none of us who deeply care for artistic beauty or who have thought problems about art in relation to life worth real consideration, who have not also been beset with the same trouble. What we have felt so often is that the artistic mood, the power to find sincere and noble expression, in words or any other medium, is wholly dependent upon the presence and effectiveness of emotions that can only come through some long, severe discipline—the discipline of life and that life imposes in paths divergent, and in regions distant, from the practice of the arts. We need not narrow down the range of such emotions to the religious and the ethical. Their range goes beyond religion and the moral consciousness, and extends from the sense of humor in simple, homely things right up to the supreme experiences of life, love and death. But the difficulty in handling these emotions lies not only in the fact that they cannot be called into being for the sake of artistic work—they must be there already—but that the conscious

intention to use them for that purpose may vitiate them or nullify them in the very aim.

Take, for example, sincerity, and all the possible emotions that this may involve in art, or that its absence may quench or distort. It has been often remarked in discussing the main problem of painting that what we are concerned to get is not truth but sincerity; that is to say, the painter is bound down not to a realistic representation of things, but simply not to feign what he does not really see, feel or believe. But clearly there is a difficulty here. You cannot be sincere unless there is something to be sincere about, or in other words, sincerity is not an emotion that in painting, or in any form of art, can be conjured into being where there is nothing that naturally calls it into play. And to try to get sincerity just for the sake of the artistic impression it is going to produce, seems to be an impossible task. Either you will get nothing at all, or something that is, in the very nature of the case, insincere.

From this point of view, then, Guyau and Ruskin are quite right. The essential of vital artistic expression seems to lie in an emotional tension, a tension that is produced by the love of something that is counted far better than the work of art itself. The true artist therefore is the man who can lay open to himself whole ranges of experience without conscious design to reap the fruit of that experience in beauty. And the further he can go in this disinterested absorption, admiration, reverence or love, the deeper will be the scope and vision of his artistic power. And when the time of expression does come, it comes with such fulness because of the concentration upon the objects of love, and not because the beauty of language or the harmony of sound or color is the aim or purpose of the artist. The more completely these can drop out of sight the higher the degree of success. They would, in fact, merely serve to dissipate his true esthetic attention. And

this is what we mean when we say that beauty cannot be directly willed.

One illustration of this principle is that the artist is sometimes so strangely one-sided—so splendidly one-sided, we might say, in some cases: where the moral aim, or the exposition of some intellectual conviction, or the expression of some narrow, but intense, patriotism is pursued at the expense, or in defiance, of everything else. English prose literature with its high degree of emotion and disregard of logic would be rich in examples of this kind. Milton is typical, but Newman is more remarkable, because the white heat of his emotion is so marvelously veiled in logical form. There is no more human document than the *Apology,* but it is not the humanity that is able "to see life steadily and see it whole." The view of religious truth which it sustains, while elaborated with as much sincerity as passion, would narrow down its evidence to such a vanishing point that none could see it save the writer himself.

But the great instance of the passionate conviction, of the unconscious, and therefore perfectly self-secure, one-sidedness which can sometimes be the soul of art, is that of Tolstoy. "In spite of his colossal artistic talent," Dostoyevsky wrote of him, "Tolstoy is one of those Russian minds which only see that which is right before their eyes, and thus press toward that point. They have not the power of turning their neck to the right or to the left to see what lies on one side; to do this, they would have to turn with their whole bodies. If they do turn, they will quite probably maintain the exact opposite of what they have been hitherto professing; for they are rigidly honest." Dostoyevsky would have been nearer the truth had he said that it was to these things, intensity of vision, together with the limitation of its field, narrowness of aim and rigid honesty that Tolstoy owed that colossal artistic talent of

his. He is the archetype of those masters of expression whose intensity of conviction serves them for lack of wholeness of vision. The degree of emotional tension within which alone we suppose art can come to birth would indeed, in such cases, have been impossible without this limitation; or at least, had the limitation been removed, that tension might have been greatly lessened, and they would have been artists of the second rank only. But in any case, the key to the nature of their art is conviction and sincerity, and the condition of its emotional fulness that their attention was directed anywhere rather than upon themselves or the esthetic character of their work. Or again, consider that craving for experience that is sometimes taken to be so essential to the artist. What yields the genuine result is not the intention to see life and reflect it in some expressive medium. It is rather the bitter fruit of experience, that unwilled by the artist, becomes the most perfect achievement of his work. The reality of penitence, for example, to what poignant music has it not given birth? And yet it is not a possible course of action for any man to go out in search of penitential utterance for its own sake.

But all artists are not like Tolstoy. There are some who like Sophocles are able "to see life steadily and see it whole," and there are others who, without losing their power or function as artists, know that they have this sincerity and wholeness of vision, and into whose work there enters the purpose to maintain it. They are not men of partisan mind, not patriots, not enthusiasts, not like Tolstoy or Milton "unable to discern where their own ambition modified their utterances of the moral law; or their own agony mingled with their anger at its violation." They are men to whom no human interest is alien, no human sympathy unknown, and to whom no kind of experience is inaccessible. Yet all that interest and all that

experience they have, or are capable of having, as artists. This is the remarkable thing. How shall we explain this impartiality of knowledge and scope of vision as belonging to the unconsciousness of art and having the power of unreflecting passion?

The most perfect lyrical utterance differs from the comprehensive vision of the dramatic poet just in this that its self-absorption admits of no awareness of the experience of other souls; whereas the self-abandonment that the dramatic poet must show in his absorption in any one character can never be without a recognition or awareness that other souls are moving and suffering elsewhere, or that there are other depths of experience besides the intuition that for the moment appears to be all-engrossing. The manifold of the interplay of character in a tragedy cannot, therefore, be a series of intuitions in which sympathy is given and then withdrawn and given again somewhere else and again canceled. Neither Othello nor Iago is conceived alone. And though there must be a wonderful absorption of the writer now in the one and now in the other, the emotional tension by which it comes about cannot be of the kind that belongs to the one-sidedness of art. Comprehensiveness of vision does not vanish in the intensity or depth of emotion at any one point. There seems, therefore, to be a kind of dialectic of art from the point where it begins in the expression of a single, splendid point of view up to the most comprehensive range of Sophocles or Shakespeare.

But there is still another step to be taken. Just as the intuition of one great character in a play, or of one great chorus, is able to pass outside the narrowness of a merely lyrical emotion, the poet may still be unconscious of the meaning of the whole play. And this unconsciousness may pass into the consciousness of doubt or wonder why he should so find himself a passive agent in the hands of a

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power outside himself. This sense of perplexity or awe may of course fall outside the true artistic intuition and belong to the man who reflects and not to the artist who feels, becoming simply a matter of unperplexed inquiry. But it is not to be assumed that it does so always. It is possible that any work of art as a whole may contain within itself the recognition of its own nature; and there seems at least good reason for leaving it an open question whether a great artistic intuition may not also be a profound act of recognition of the nature and place of art in human life, or of beauty in the order of the spiritual world.

But as there are many critical thinkers who would challenge the possibility of a movement in philosophy through which the mind should be able to overcome the opposition between itself and its object, there would be, and with at least equal reason, the same challenge thrown out by artists, or by certain minds possessing a deep sensibility for art, of the meaning that could be attributed to art into which knowledge or will might enter, not merely as an external motive or setting, but as an inner quality expressible only through beauty. Such critics would remind us that though the same vehicle which is used for reflective thinking can also, in another way, be used in prose or verse as one of the most remarkable forms of beauty, there is nevertheless a unique possibility of deception in taking this kind of art—which happens to bear the form of reflection—as a means of elucidating the character of beauty in general as it is, or is thought to be, in common to all the arts. For it is so easy to attribute to depth of thought the power of verse that moves us so deeply; and therefore to attribute truth where we are only justified in asserting beauty.

But architecture or the forms of mountains and the colors of the sunset or pure music are beautiful without being reflective; and is it not likely that poetry must be

beautiful in the same way, that its beauty makes itself felt either in spite of its apparent depth of thought, which only gives the power of illusion, or because the reflective thinking which we find in it is a mere accident and quite irrelevant to its beauty? Whether this be so or not—and it is probably not so—we should at least be safe in taking such forms of art as pure music and such forms of beauty as mountain and sunrise to be our guide when we try to say what beauty is, or to find its place within the spiritual order and what it signifies with respect to that order.

If, using the language of the *Timaeus*, we were to regard natural beauty as the artistic workmanship of God, it would, as art, be perfect in this respect that it reveals nothing of the personality, nothing of the purpose or design, of the creator. It would be a piece of self-expression of such purely esthetic quality that the intellect can find no ground within which to make a single judgment about the reason or character of its beauty. Even in music we can trace both resemblances and developments, and in so doing are able to link it up with other parts of life. Of some music, as we hear its several voices lament to each other while they yet cry after one another as though in mockery, we say that none but Bach would have made the parts move against each other just like that; and there is some music that while we listen to it makes us see the hills of Salzburg as though they were present to the eye of sense. But of nature we cannot say that the view over the Lake of Geneva in a summer's dawn of the valley of the Rhone and of the Dent du Midi is more characteristic of the Deity than the starry sky of Königsberg on a winter night, or even that God liked the Alps better than the soft green hills of the Scottish Lowlands. The intellect is powerless to make a single step in tracing the character of the workmanship back to the workman. And yet, the pure intuition of nature is not the intuition it asserts itself to be unless

it goes beyond itself and implies a reference to something other than itself that we are able to think only under the aspect of what we know as judgment and reflection. It is not that it is to give us knowledge or vision of some transcendent reality; only that it implies the reality and truth of something that is more than itself. And it is this linking-up of world to world, of life to life, of one experience to another that recalls us to mysticism and makes us ask if it does not belong to apprehension of natural beauty, and therefore also to art.

But music comes closest to this character of natural beauty in its escape from the sense of personality, with its bonds of purpose and design. And music has this great power in its freedom from realism and externalization, that it does not represent a spiritual ideal or strive after the thing aspired to, but is actually part and parcel of the soul's life itself. As expressing itself in time, and only in time, it is coincident with the flow of that life, and not coincident only, it really is that life. For a piece of sculpture may express repose, and a picture may express unrest. But music if it expresses repose must actually be repose, or if it express the reverse, must actually be agitation. Now, what is characteristic of mental life as something that changes and flows onward in time, is that whenever it reaches a level such as that of expressing personality or of revealing itself as individuality, it also presents a unity that does not conflict with its character of being in time but that quite overcomes the diversity of time as it appears in ordinary experience, and its nature of destruction, effacement or absorption in itself. In personality, and perhaps in other forms of individuality, this unity is only an implicit one, or a unity that is only to be experienced as an abstraction for the intellect. But in personality as felt, or making itself felt, and especially in higher forms of individual experience that differ in degree or kind from what are dis-

tinctly personal, the unity ceases to be merely implicit, and becomes a perception or an intuition.

There is an effort of the mind, or goal of the will, to transform change and decay into permanence of life, and it is one of admitted value on all sides. It has been proposed as the ideal of knowledge in the eternal character of the idea; as the object of the moral consciousness in the realization of eternal life through temporal experience; and it cannot be without significance for what we know as beauty. What poetry and architecture, as the "strong conquerors of the forgetfulness of man," can vaguely symbolize, music can not only symbolize but acually be. Mozart, it will be remembered, said that when he composed music he heard it in his mind as a whole and all the parts of it, as it were, simultaneously. This may either be an exaggeration or the feeling of a musical mind of an unusually high order. But there are many who in listening to music that they love are quite simply and naturally aware of something like the simultaneous apprehension of temporally separate parts. For the reality and familiarity of the experience they are not dependent on Mozart's word of honor. There may be other kinds of soul-life that give as profound intuitions of this kind as music does. But there are none that give it in such clear and unmistakable terms. There is here, therefore, something more than a mere symbolization, something that actually expresses what is or may be an essential quality of time; that actually reveals its true nature. It may or may not be right to say that it manifests something eternal, and of which time is after all but the expression. But it is an experience that is certainly real, and that must have some meaning. Again, it is essential to observe that this sense of rising above the mere flow and sequence of time belongs to the intuition which is beauty in musical art, and not the reflection about it. And though as beauty of sound it seems to have the

same sense of self—transcendence that was attributed to the beauty of the mountains, the sunset or the stars—it is only because, being part of life itself, it implies that all life is through and through of the same character and texture.

And if so, is it not here that we might look for the healing of what is undoubtedly the greatest cleavage in the spiritual world. It is true, indeed, that there seems to be no ground of inner harmony between what we esteem as goodness, truth and beauty; or at least that if there is, it seems to belong only to the pattern of the world that is laid up in heaven. And yet it is always taken for granted, and it is felt to be an approximation to the mark, that the demands made upon us by knowledge and through moral ideals conflict only at times, and as it were by accident; whereas those made upon us by the cultivation of the arts and the impartial recognition of beauty wherever we find it are too apt to stand either in aloofness or actual hostility over against our deep insight both in personal morality and social ideal. The flowering time of the arts, it has been said, when the main impulses to beauty are not for the sake of knowledge or religion or ethics but are motived only for the sake of beauty itself, are also times of prevailing hardness of heart, and indifference to social well-being.

But if, within art itself, there lie the possibility of this mysticism or mystical movement which can perhaps only be indicated through a vague and shadowy analogy with mysticism in thought, those impulses and unreasoning instincts that present themselves as wholly unconscious and unwilled would take on a new character and a new light. In recognition of their nature or intuition of their purpose, on the intellectual side, or in acquiescence in them or in valuation of them, on the ethical, they would assume an altogether new relation to other parts of experience. There would be an ideal in the pursuit of art for its own sake or for the sake of beauty which, if it did not coincide, would

converge, with those intellectual or ethical motives that prove so fruitful and vital for the essential emotion of the artist. The true artist, and the lover of beauty, must always reach a plane of experience where no value appears capable of being placed beside the value of beauty as such. And this deep conviction they must somehow try to justify and set in relation to life as a whole.

Perhaps it is only a profounder and more elemental experience than any of these which we have taken as the main types of the life of the Spirit—science or philosophy or art —only in intimate converse of mind with mind, in friendship, or in love, that we are persuaded of the full meaning of the words, "He that soweth to the Spirit shall of the Spirit reap Life Everlasting"; but there are many who could conceive no abiding reality of life that does not lead up to, and include, the sensuous passion of art.

J. M. THORBURN.

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CRITICISMS AND DISCUSSIONS.

ON THE THEORY OF PROBABILITIES.

A study of philosophical literature and periodicals of the last thirty years leads to the conclusion that the theory of probability has made little progress since the time of De Morgan and Jevons. Coupled with the lack of progress there has been an enormous development in the use of statistics, and there is other evidence of a growth of interest in the practical problems of probability. A large extension in the applications of a science, without a corresponding growth of interest in its principles, is sometimes dangerous. In the particular case of the theory of probability it is clear that a serious reexamination of its principles is urgently needed. A hint of a breeze in this direction is to be seen in *Mind*, October, 1918, where Prof. C. D. Broad restates the question of the relation of probability and induction. It is, I think, worth while to make a few general remarks in the lull before Professor Broad's lead is taken up and the whole question put on a more satisfactory basis.

Probability propositions are to be distinguished by the fact that they involve certain special notions. It is necessary first of all to discuss their form in order to see the nature of the entities to which the notions of probability can significantly be applied, and then to discuss what primitive ideas the system needs. It has been recognized[1] that in all estimates of probability there is an implicit or explicit reference to a state of knowledge relative to which the probability of some proposition is to be assessed. Probability in general has reference to two propositions; the fundamental notion is then the probability of one proposition being true assuming an-

[1] Cf. Jevons, *The Principles of Science*, p. 212; Broad, "The Relation between Probability and Induction," *Mind*, Oct., 1918.

other is true, or (as it may be more conveniently expressed) the probability of one proposition *on* another.

The propositions consist in a relation *less than, greater than* or *equal to* between probabilities, or in the evaluation of the probability of a certain proposition on a certain ground. It will be important to discuss the relation between these notions. We may, e. g., tentatively suggest that it may be necessary to take only one of these notions, *the probability of, more probable than, less probable than, as probable as,* as a primitive idea in the system. For we may use the relation *more probable than* as primitive, defining *less probable than* as its converse and *as probable as* as the negation of the sum of these relations. (This is only satisfactory if to say that one entity is more probable than another, if it is neither more nor less probable than the other entity, is to give a permissible interpretation of the notions involved.) Then the probability of an entity will be defined as the class of equally probable entities. The problems of the nature of entities to which these notions can significantly be applied, and of the relation between them, complete the first division of the theory.

A very superficial examination of the structure of our belief will convince us that there must be some probability propositions which are to be accepted because of their relation to other propositions involving the same notions, and some which are to be accepted independently of any such proposition. This division into primitive and derived probability propositions is essential. It must, however, be noted that primitive probability propositions may very well be logically derivative. The property which distinguishes them from other propositions of the group is that they are not derived from any other *probability* propositions. But it is a difficult matter to effect this division. The possibility of a theory of probability depends upon the fact that there is a certain measure of agreement as to which probability propositions are true and which are not. When, however, we try to discover which of these propositions are accepted derivatively and which are accepted primitively, we find that there is no great consensus of opinion. This science, like, for example, any serious science of ethics, must consist in part of making definite certain beliefs vaguely held by a number of people. It seems to be the case that people believe vaguely and with varying degrees of conviction large numbers of propositions not logically independent. A logical treatment of probability propositions which

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is necessary if a system is to be established, will then include a discussion as to which are to be taken as primitive in the system and which are to be taken as derivative. The procedure will consist in discovering which various subsets of the propositions of probability are sufficient to imply the rest. It will then be necessary to choose one of these subsets; in our choice we shall pay due attention to the varying degrees of conviction with which the various propositions are believed. A careful consideration of the propositions to be taken as primitive in the theory of probability will throw light on the significance of the notions involved, and may perhaps lead to a definition of *more* or *less probable*. The existence of such a definition would then enable us to decide as to the truth of any other primitive probability propositions. It seems plausible to suppose that such a definition, however, will only come from a consideration of the generally accepted propositions of probability.

When the question of the primitive propositions has been discussed, an investigation into "probability inference" must be attempted. We must have, as in geometry, certain postulates as to how some probability estimates can be made to yield others. The general problem is to find the relation between the probability of p say on q in terms of the probabilities of a on b, c on d....To hold that probability inference is a possibility is to hold that certain probabilities determine certain other probabilities. The question as to what particular probabilities must be given in order that certain other probabilities may be determined will have to be discussed. There is, however, one general aspect of the problem upon which I wish to make a remark. Clearly we shall not expect to get a relation between the probabilities of a on b, c on d, e on f....and p on q, if there is no relation between a, b, c, d, e, f and p and q. This delimits at once the province it is possible for probability inference to cover. The fundamental logical relations between propositions are very few: out of them, all other logical relations of propositions can be manufactured. The relations are included in the following ones: (1) A proposition may be the contradictory of the other; (2) a proposition may be the sum of a pair of propositions; (3) a proposition may be the product of a pair of propositions; (4) a proposition may imply another proposition.[2] If, then, we are able to discover relations which it is plausible to suppose subsist

[2] It is not necessary to discuss here, whether the definition of implication in terms of the first two propositions is possible. (Cf. the definitions of Whitehead and Russell.)

between the probabilities of a on b, c on d, e on f....p on q when p and q stand in any of these fundamental logical relations to a, b, c, d, e, f.... careful manipulation will enable us to get relations between probabilities of p on q and the probabilities of a on b, c on d, ..., when p and q stand in any logical relation whatever to a, b, c, d.... The role of the postulates to be adopted is plain. We want relations between the probability of p on q, *not-p* on q, *p or r* on q, *p and r* on q; relations between the probability of p on q and r on q when p implies r; and further, relations between probabilities in which the state of knowledge relative to which they are to be assessed is varied in an analogous manner. This at once delimits the field: the fundamental principles giving the way in which probabilities can be combined will be correspondingly restricted. The form of these postulates should be noticed. One used by Jevons in *The Principles of Science* (p. 205), e. g., runs as follows. *The sum of the probabilities of two propositions is equal to the probability of the sum of the propositions together with the probability of the product of the propositions.* When we are concerned with getting further rules for the combination of probabilities we treat the postulates as propositions defining the way in which probabilities can be combined. As an example of the form of the results we may take: any predicate ϕ satisfying the propositions

$$\phi(x,h)+\phi(y,h)=\phi(x \text{ and } y,h)+\phi(x \text{ or } y,h);$$
$$\phi(x,h)\times\phi(y,x \text{ and } h)=\phi(x \text{ and } y,h)$$

also satisfies the proposition

$$\phi(x,h)+\phi(y,h)+\phi(z,h)-\phi(y \text{ and } z,h)-\phi(z \text{ and } x,h)-$$
$$\phi(x \text{ and } y,h)+\phi(x \text{ and } y \text{ and } z,h)=\phi(x \text{ or } y \text{ or } z,h).$$

The interesting point is that, any ϕ whatever satisfying the postulates satisfies the derived propositions. The process of obtaining the consequences of the postulates adopted is an exercise in pure logic and like the theory of the ancestral relation, which is vital for the analysis of mathematical induction or the theory of vector families which is important in the analysis of the notion of quantity, forms a chapter in the theory of modern logic. The process of deduction is then identical with the processes used in any branch of pure mathematics as, e. g., in projective geometry. The antithesis traditionally drawn between inductive inference and deductive inference is therefore to be abandoned, if a view of probability theory in accordance with modern logic is to be developed. As in all other

branches of knowledge in which there are some primitive and some derived propositions, the truth or falsehood of the derived propositions rests on that of the primitive propositions and on the truth of the postulates adopted as to the behavior of the concepts involved in the propositions, if we may assume that the purely logical problem of developing the consequences of the postulates has been correctly solved. If in any group among the derived propositions there are some which are exceedingly unplausible, the postulates and the primitive propositions adopted must be examined and modifications may then be made.

But it is important to keep the purely logical part of the subject separate from the inquiry into the truth of primitive probability propositions. The analogy with geometry is particularly suggestive at this point. Pure geometry consists in the investigation of the logical consequences of different systems of postulates, and in the analysis of these postulates. Applied geometry examines what propositions are true of the external world and takes over from pure geometry the logical consequences of the propositions. And it is in this connection that it is important to point out that the derivation of the consequences of the postulates adopted in probability theory can be put in the form: the property ϕ satisfies certain propositions, therefore it satisfies certain other propositions. We will take one example. It has been assumed in the traditional treatment of the subject that probabilities are quantitative. De Morgan, for example, in his *Essay on Probabilities* (p. 18), says in answer to objections as to the measurement of probability: "Again as we are most unquestionably justified in saying that it is more probable we shall draw one of the two *a* or *b*, than that we shall draw *a*, the argument must be directed against the method of measurement, not against the possibility of a measure: for wherever *more or less* are applicable terms, twice, thrice, etc., must also be conceived to be possible whether we can ascertain how to find them or not." We postulate that probabilities are quantitative in order to satisfy a vague unanalyzed feeling about them; this feeling would perhaps be as readily satisfied by the postulate that probabilities form a series (i. e., by the postulate that the relation *less probable than* is nonreflexive, connected and transitive) or possibly by a part of this postulate.[3]

This question of probabilities being quantitative is only one

[3] In particular it is possible that it may not be necessary to postulate connexity.

of the various problems as to which postulates most nearly represent our feelings about probabilities. In the light of modern logical analysis many assumptions as to the nature of probability no longer seem obviously necessary or satisfactory. It is a matter of great importance for the development of the theory of probability on a secure logical basis that these assumptions should be carefully analyzed into their constituent parts.

The object of this paper may then be summed up in the following way. Before embarking upon the general reconsideration of the interesting and important problems of probability, it is worth while to consider in general terms the various parts of the theory, with a view to laying down the lines which any satisfactory theory must follow. The form of the present inquiry is then sufficiently explained. Probability theory consists of a set of propositions grouped together by reason of the concepts involved in them. A satisfactory treatment of the subject should give a discussion of the nature of these notions, and in particular a discussion of the nature of the entities to which they can significantly be applied. It should also give in their most fundamental form postulates involving relations between various probabilities, the propositions implicated in these probabilities being connected by various fundamental logical relations. Further, the logical implications of these postulates should be developed, so that the relations between probabilities involving propositions connected by complicated logical relations may be formulated. The postulates and their logical consequences provide the principles of probability inference. In order that these laws of inference may be applied to the problems of science, it is further necessary to examine the primitive probability propositions which are to be assumed, and to work out the results logically entailed.

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THE FUNCTION OF GENERALIZATION.

I have a friend in one of the older sciences who has a reputation on both sides of the Atlantic for some splendid work he has done in one corner of his field. He is in many respects a broad-minded, tolerant man, especially when he is dealing with his friends or is concerned with matters outside of his province of technical investi-

gation. The other day he picked up from my desk one of three volumes of a ponderous work on the development of a certain social institution, remarking, "Such a book as that frightens me. It should never have been written." I was curious, but not altogether surprised. "Why not?" I asked; "is it not a good thing to have the knowledge so far uncovered synthesized for the general reader?" "Perhaps," he replied, "but it is bound to be full of errors; its writing should have been delayed at least one hundred years, if indeed it should ever have been undertaken. In the meantime the author might apply his energies much more to the service of science by taking some small section of his field or some one epoch and working that out as fully as the data will permit. That is the only way science will grow." I looked about the room full of books and remarked, "Perhaps you hold the same opinion about other attempts to generalize in sociology. What would you say of the works of Spencer, or of Lester F. Ward, or of this work in twelve volumes professing to give an account of the development of certain religious ceremonies and practices? Or would this one-volume work on social progress, or this on social control fare any better at your hands?" "All of them suffer from the same disease," he replied. "Think of trying to state a tenable theory of so wide a field as any one of these books attempts to cover. Without being familiar with your subject, I take it that you are only beginning to mine the ore of your data in any one of these fields. It is inconceivable that any one can write a general synthetic work in any of them which will be standard for a period of ten years, and I should suppose that there is no general agreement about the conclusions there set forth even now." "You are quite correct," I replied, "at least in regard to the tentativeness of the theories set forth. The authors themselves generally recognize this fact. Or, if they do not, the community of the sociologists do, and that is more important."

And then I tried another tack. This distinguished neighbor of mine submits, I have long suspected, to being called friend by me for other reasons than because I am a sociologist. My professional affiliations constitute a blot which he is willing to overlook in behalf of certain other considerations, one of which is that I can cheerfully take a defeat at golf and play again. Accordingly I suggested: "Possibly you would not approve of the methods of the social sciences in general, and of sociology in particular? Possibly you would not apply the sacred term 'science' to such lax disciplines as

we profess; possibly not even honor them with a place in our university curricula?" My learned friend smiled quizzically, almost as if he were on his favorite topic, and said, "I would not call sociology and the other fields of social investigation sciences, especially not in their general or theory aspects. They have not arrived at the maturity of sciences. Their methods are in process of formulation. They have yet a vast amount of concrete investigation to do in an appallingly large number of fields. When the concrete workers catch up with their generalizers and their generalizers pay heed to their investigators, the social subjects will become social sciences. In the meantime," he added smiling, "I suppose we must tolerate you—and admonish you. But, for heaven's sake, don't let your colleagues write such books as these."

All this was not entirely new to me. There are at least one hundred men in my university who feel much the same way about sociology and the social sciences. In every American university sociology hangs on by the skin of its teeth, as it were. Its teachers are required to handle classes of two or three times the average size of sections in the college, because funds are not appropriated by the budget-makers—consisting in the main of representatives of the older sciences—for the employment of enough instructors to meet the teaching requirements. And what is a little worse, we cannot secure funds for the carrying on of the investigations which our colleagues say we should make, because ours is not an exact science. We spend our days and nights running an adding machine (when we are fortunate enough to borrow one from another department) or in pounding out our own data upon the typewriter, while our friends have the clerical help and expert assistance they need. They merely "direct" their research. We must carry it on with the labor of our own hands and brains from the making of our schedules to the preparation of our manuscripts and then we may find that our petition for publication lies on file for months or even, on some occasions, for years and may finally be forgotten or denied altogether.

Something like this I said to my friend and he manifested the same polite interest which I have known him to express on other similar occasions. Really, he is not an administrator and I do not expect him to move heaven and earth—perhaps that is exaggerating the bulk of the opposition—for my beloved subject's cause. But to-day I was more interested in another matter, the direction which

our conversation had first taken and held to in the main. I knew that his views on the evils of overgeneralization were quite conventional and were shared by the general run of investigators everywhere. My friend has never written a general work, not even in a relatively special field, and he does not intend to do so. He has too much respect for his duty as a contributor to the fund of scientific knowledge. As much as I respect his achievement and the value of the highly specialized investigator, I did not think I agreed with his views on the function—or lack of function—of generalization. To make sure of his position, I asked him a question. I said, "Would you condemn the work of the generalizer in the older sciences equally as strongly as in the social sciences?" "Only in less degree," he replied; "the great need of science now and always is more concrete data, more special investigation."

"Are you not now speaking solely as a technician?" I replied; "it seems to me that unquestionably there are at least two great functions to be served by the scientist, and each is worth while, although largely for different reasons. You uphold one of these functions, that of the increasing of concrete scientific knowledge and the perfecting of methods of investigation to that end. I am wholly in sympathy with you and hope to see the day when my own subject can boast of men as distinguished in this line of service to science as those in any older field of investigation. But as a mere member of society—a citizen—I wonder if you would make the same argument as you have maintained. From this angle would you not find more use for the sociological generalizer?"

"I scarcely think so," he replied; "your writer on the history of the human family or the compiler and interpreter of all those questionable data on religious ceremonial, which I see over in the corner, misleads the public. Why cannot he be content to wait until some one or some one hundred real investigators have unearthed the facts?" "And leave the public, who are not scientists and have not the scientific method of criticism, to continue in error in the meantime?" I interposed, I fear somewhat intolerantly. "By no means," replied my friend, quickly; "the real investigators will publish their monographs and reports, and in these all the reliable data must be found anyway." "But the public does not read monographs and reports and never will," I contended; "it is only when some generalizer synthesizes these technical sources of knowledge into a connected and interpretative whole that the public will ever come to

understand the significance of the monographs of the special investigator and profit by their work. This, in my opinion, is one of the main functions of the generalizer—to interpret; to synthesize and harmonize the work of the special investigator so as to make it intelligible to and available for the general reader—the citizen, if you will. I admit your point, that in making a plausible whole out of incomplete parts the generalizer will often make mistakes and write things in his books which will not stand the test of time. But his is largely a social service, rather than a service within the narrow confines of his technical science, and it is such a great service to society that it is abundantly worth all the present error and the future correction which is necessary. The people have a right to know as much as there is to know at any particular time."

I had spoken with conviction. My friend was tolerant. He permitted himself merely to reply that he thought it better that the public should remain in ignorance of such technical questions for the time being rather than that they should be taught something which later they would have in the main to unlearn. For his part, he thought, we could go too far in muddling the brains of the average man with formulas and theories about things which did not particularly concern him anyway. Science is a matter primarily for the specialist, not for the public, and it should conform strictly to the canons of scientific procedure rather than to those of public policy, especially where public policy was little concerned.

"But," I contended, "you greatly mistake the public's attitude if you imagine they do not concern themselves with these matters. No error could be more profound than to suppose that the masses of people do not already have theories in regard to these very matters upon which these volumes which surround us are written. They are interested in everything under the sun. They have their explanation of the origin and development and functions of the family, of the meaning of ceremonial, of the sanctions of the State, the methods of fulfilling democracy, the relation of taxation to public welfare, and even of the origin of species and the biological value of war and the methods of achieving social progress even to the millennium—which unfortunately they, in common with some physicists, biologists, theosophists, Seventh-Day Adventists and the like, do not for a moment doubt will some day arrive as automatically as though it were predicated by an inherent law of nature. They do not lack for theories. The tragedy is that their theories

are so crude and uninformed by the light of scientific investigation. It is to throw this light of science upon the traditional theories of the sorts now held by the public that I would urge support of the generalizer. There is never any danger that a sincere and well-trained man in his subject, possessed of the confidence of his scientific fraternity, will fail to displace much more error in the minds of his readers by means of his general treatise than he will add to those minds. In fact, he is the chief clearing-house through which the average man must be rid of his unscientific traditional theories about a thousand and one things, and because he serves this social function he deserves the approval of society and even of the highly specialized scientific investigator."

My friend had listened to me patiently. He answered, after a moment's thought, "That may be true in the social sciences, where the average man is so intimately concerned personally with the subject-matter of those disciplines, and therefore has his erroneous or traditional theories already formulated; but I doubt if the argument applies with equal cogency to the older and better-developed sciences." "It does not apply equally, I admit," I replied, "because a long period of generalization by such men as Darwin, Huxley, Haeckel, Mendeleeff, Helmholtz, Herschel, Chamberlin, Loeb and scores of others more or less eminent has largely removed the traditional errors from the popular mind with respect to the fields of physics and chemistry and biology. The social sciences have not yet produced such a splendid exhibit of generalizers to accomplish this task for their fields. But we should, I think, welcome every generalizer of adequate training in his subject who will undertake this service to his less adequately trained fellow men. Even in the older sciences the early generalizers made many errors which have now to be corrected by further specific investigations, and as the fabric of their theories becomes rent with new knowledge until the mass of their work is discredited or supplanted, new generalizers arise to restate the knowledge since accumulated in those fields and to harmonize it with the old knowledge which remains undisputed. But for their day, the old generalizers led the masses of mankind to a new and better view of phenomena in their sciences just as do the new generalizers. No one should know better than the special investigator that ultimate truth is never attained in any one generation or by any one man, but that truth grows by small accretions and is relative to the age in which it appears. So does the general

intelligence of mankind grow and readjust itself to new worlds and times, under the guidance of the generalizers who digest the findings of the specialists and adjust them to the theories which have prevailed before."

My friend was thinking—about what he did not disclose. I am not certain that he had heard the last part of my monolog. Since he did not reply, I ventured upon a further remark: "But the social service is not the only one rendered by the generalizer, the writer of synthetic treatises. Perhaps an equally marked one is rendered to the advancement of science itself." "How do you make that out?" queried my caller, his interest returning, as much by way of shock as by conviction. "It serves scientific progress in two ways," I continued. "In the first place it does for the scientific investigator and the correlator something closely analogous to, although not identical with, what it does for the common man; it affords a point of departure for future work in the science. This is, of course, obvious enough in the case of the subsequent generalizers who construct their theories at least as much by way of critical reaction to the old treatises as by original generalization. But it is also true of the special investigator. There could be no consistent and organized progress in a branch of science except as the workers in it were able to proceed from some view-point or vision of the field as a whole. Otherwise experiment and statistical correlation would be largely random and whimsical, colored and skewed by personal interests of the investigator for the moment. Research can be planned and carried to successful completion only when the investigator, or some one who plans and directs his research, sees the larger synthetic problems of the science and its movement or development as a whole. And it matters little, I take it, whether the investigator agrees or disagrees with the general formulations of the science as expressed by the generalizer who serves as a point of departure. If the investigator finds himself in agreement he may be stimulated to work out in detailed quest of data some of the flashes of insight suggested by the generalizer. If he disagrees, his strong reaction against the conclusions of the theorist serves all the more to stimulate the researcher to the discovery of the data which will serve as the bases for correct and undisputed generalizations. Could," I asked, "modern biological science have made such rapid progress in the last fifty years if the controversial stimulus of the theoretical work of Darwin had been absent?" "No," said

my friend. "Has not the formulation of the Mendelian theory, following the investigations of Mendel and his successors, stimulated modern investigators into the field of heredity, both in behalf of the theory and in support of the theory of acquired characters, thus enriching our knowledge of this subject manifold?" "Undoubtedly," was the answer.

"A similar result was produced by the work of the sociologist Comte, and only a less marked influence was exercised by Spencer and Ward and others of their kind," I continued. "These men are no longer read with assiduity, even by scholars in the field. They have reached the stage of digest and analysis followed by interpretation and condensation for all but the specialists in the history of social theory and a few other general theorists. But the appearance of their works initiated new epochs in the study of social phenomena as well as closed old ones. They set new problems, by way of reaction from their conclusions, whether they desired it or not. And suppose," I went on, seeing that my guest was disposed to let me talk, "no generalizations had been made in physics since the days of Copernicus or Newton, but data from investigations and observations had piled up continuously, interpreted only by the lecturer and the teacher. Would not the task of sifting and putting in perspective these accumulated data now be so great as to be impossible? A careful investigator would have to spend the best years of his life sifting through this material, much as a searcher now goes through the files of the patent office looking for old models, before he would dare in conscience to begin a new investigation. The generalizer performs a valuable service to science merely by sifting through the accumulated material and discarding the rubbish while he organizes conveniently the acceptable achievement of the past.

"Nor must one neglect the public as a patron of scientific investigation. In these days of democracy, or near-democracy, no scheme for developing scientific investigation on a national scale and over a long period of time can fail to take account of the intelligent support of the voter. He will not read monographs. With the multitude of vocational and other interests which beset him, he will do well if he reads general works in a considerable number of sciences, either within college walls or later as he runs the gamut of life. He must have some understanding of the results of our work if he is to be expected to support it."

I had many other things in mind to say, but my friend was becoming restless. I should have liked to point out to him the value of the sciences for citizenship. I had in mind a particularly telling thrust, in revenge for his depreciation of the general sociologist, to be delivered by calling in question the utility of the six-year course of the modern medical school, in which he is interested, on the ground that it is very largely a process of instilling into the future physician the general conclusions or generalizations of the various medical sciences. I contented myself, however, with remarking in conclusion that, "Generalization is always valuable in all subjects. Like concrete specialized investigation, we cannot have too much of it, and we should encourage it heartily whenever any competent person is willing to undertake it. Unsatisfactory and incomplete as any one synthetic study must always be, it is a stepping-stone to something better, because it gives orientation and stimulation either to complete or to refute it. It is a point of departure."

My friend merely said: "I came by to see if you would like to try your hand at a game of golf." I took my clubs and went out with him, leaving the future of sociology and of all science except that of the nine holes, in abeyance.

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WHAT IS ESSENTIAL IN TEACHING PHILOSOPHY?

Practically every college in the country to-day demands that its students take a certain number of courses in philosophy. If you were to ask why these courses in philosophy are demanded from a student before he can graduate, the answers would undoubtedly be vague and hazy. The probability is that no two people would agree on just why it is essential that students take these courses in philosophy.

The prime reason for demanding that students spend a certain amount of time in the study of philosophy is due without doubt to tradition and custom. During the past decades a certain amount of philosophical culture was necessary, just as a certain amount of classical culture was necessary to any one who wished to be classified as a person of culture. Our curriculum traditions have undergone a change in respect to classical languages, and their importance has decreased and is decreasing with the passing time, due largely

to economic pressure, but philosophy still holds its time-honored, hoary place upon the list of requirements prescribed for students before they can graduate.

This philosophical mill through which the prospective bachelor of philosophy or of arts must pass has its humorous as well as its tragic side. There is a humor in seeing these students pigeonholed into certain courses in philosophy. Blindly they are thrust into a course in Greek, medieval, or modern philosophy; perhaps a course in Aristotle, in Kant, in Hegel, or in Dewey. It is entirely a grab-bag arrangement, and the course which is the snappiest, or which has the funniest professor, or which is located in the most convenient building or at the most convenient time is usually selected. The student may thus begin his philosophic studies with Hegel, Kant, Aristotle, Royce without having had any background whatsoever. Sometimes he has had a brief introductory course, which is usually a course of one quarter or one semester covering the entire field of philosophy.

This arrangement, of course, has disastrous results. The students get a certain amount of philosophic knowledge, but this knowledge is not at all connected or related to other facts of life, and is, consequently, as far as the student as an individual is concerned, absolutely valueless. This mass of knowledge, being unrelated and entirely independent of other facts of life, cannot be utilized and is, thus, soon forgotten.

Seldom, if ever, is the attempt made to give students consecutive courses in philosophy. Instructors in philosophy on the whole have not learned the value of knowledge in its setting. They have designed courses which consisted of dipping here and there into the stream of philosophic thought and taking sample courses in Kant, in Hegel, in Plato, in Aristotle with the greatest sangfroid. One student has taken this one, another has taken that one. The knowledge that they have obtained is not knowledge that can help them in their practical life, nor is it knowledge that can help them very much in cultural life, and the quizzical expressions on the faces of some of these students in philosophy is pitiable and is in itself a terrible indictment.

Just what reasons can philosophy give to justify its place on the curriculum of required subjects of the undergraduate? Is the knowledge that one gains in studying various systems of philosophy a knowledge that is useful and essential in practical life? If that

were all that philosophy could give to justify her place, she would indeed deserve to be thrown out at once, tooth and claw. Philosophy is a study that does not put content into the mind, but it develops the individual view-point; it teaches the individual to interpret and evaluate life in a philosophical manner. It furnishes no new materials from which to build new structures of knowledge, but it digs around in the dump hills and ash heaps of commonplaces and finds there rare and costly ornaments and materials which the individual never knew of and which he can use. Philosophy can be compared with a piece of agricultural machinery: the machine does not add anything to the soil, but by using the machine the soil can be better cultivated in a shorter space of time and the result is a vastly increased profit for the owner. Philosophy, then, is a view-point and a method, rather than a certain branch of knowledge, which must be learned and digested into activities of life.

To improve this machinery of the mind, to give this philosophical outlook upon life should be the aim of philosophy. With this aim firmly established it becomes one of the most important and vital subjects that the undergraduate must take. It establishes then for itself a secure, firm basis, and "the gates of hell shall not prevail against it." Its value becomes stupendous, for it furnishes the foundation for all the knowledge that the student gathers; it becomes, in other words, the corner-stone for his education. Philosophy will cease to be underestimated as it is now so ofttimes, and will be able to take its place among the subjects that are essential and important.

But just how do we go about this process of improving the machinery of ideas? What are the essential things that must be taken into consideration? The key-word to the whole process is "interest." Material must be selected and handled in such a way that the student's interest will be aroused, his curiosity must be stimulated, and then by proper handling of these materials an abiding interest in philosophy and a philosophical attitude toward life can be created.

Instead of chopping philosophy up, as is the custom at the present time, into logic, ethics, metaphysics and esthetics, we will take the whole field of philosophy as it lies stretched out before us with its beginnings in the distant past, and stake out a clear-cut path through the wilderness. The important philosophers of the ages, those that have contributed heavily to the philosophic thought

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of the world, will be studied as a unit. Each philosopher that is dealt with will de discussed from the standpoint of his ethics, his metaphysics, his logic, etc. Instead of giving separate courses in ethics, in logic, in metaphysics, these philosophers will be studied in consecutive order, and thus we shall in a gradual way unfold to the student the philosophical thought of the ages. The instructor need not worry then about holding the interest of his class, for he shall have definitely settled that problem. Philosophy is the most interesting study when handled in a scientific manner. A general course like this in philosophy should run throughout an entire academic year. I know some will shrug their shoulders, if they do nothing worse, at this profanity. "How could it be possible," they will exclaim, "to give a student more than just a bare inkling of the subject in this space of time?" To those I would say: "Examine your teaching methods. If you can't give a student something more than just a superficial knowledge of your subject after you teach him an entire year, there is something wrong with your methods or with you." The philosophy of the present and of the past is not found in great verbosity. In order to give knowledge it is not necessary to use great volumes of words or to wax eloquent in language. Of course, organization is necessary, and it is taken for granted that you know how to present your materials. I know that when I teach a class in general philosophy for an entire year, I shall perhaps not have been able to give them an all-comprehensive knowledge of the subject, but I am assured that they will at least have a fairly thorough knowledge of that subject.

By combining logic, ethics, metaphysics, philosophy of religion all in one a great deal of valuable time will have been saved: moreover, these fields are more or less interrelated, and when we tear them apart and abstract them from each other, as we are doing at the present time, we are creating an artificial division within the mind of the student which is entirely unjustified, and, in consequence, we rob these subjects of a large part of their value. For instance, when you study Plato, why not study his metaphysics, his logic, his ethics, his political philosophy all at once instead of taking each one separate and labeling them under different courses? As I say, you save time and do away with confusion, for if you study Plato in various courses, such as ethics, logic, political philosophy, etc., the odds are that no one student will get all the courses, and the confusion is complete. How long, oh Lord, how long, might

well be our cry, must education be dished out in this single, pigeonholed style? Let us strike out into the wide sea: let us say farewell to the hampering traditions of the past and let us map out for ourselves a course which shall be in accordance with the light of science.

What should I stress in philosophy to the average student who is not making a special study in the field of philosophy? This is perhaps the question that is heard most frequently. It is an important question, and the way in which this question is answered is what determines whether or no a course in philosophy is a success. To the average student, it seems to me, the ethical and social side of philosophy should be stressed. The ethical side of philosophy, not so much the historical side, but the live ethical questions of the day can be made very interesting, and here the instructor has untold possibilities in developing the thought of his students. He can take live ethical problems and criticize them and pass judgment upon them in the light of the ethical concepts of the past. Of course, some historical background and some psychological background will have to be presented, but by confining himself mostly to the philosophical problems involved he will have the most success. In the same way he can treat the social side of philosophy. This would include politics, religion, etc. Here he would have a field which is just as interesting to-day as it was two thousand years ago. By emphasizing these sides of philosophy the instructor could instil into his class this philosophical attitude which spells rationality and science.

The personal equation cannot be overlooked in the teaching of philosophy. Too often men are chosen for other reasons than ability to fill our chairs of philosophy. This, of course, is entirely unjustifiable. It is customary in many of our universities of to-day to judge a man's teaching ability by a book or some books that he has written. As a matter of fact, this is no gauge for his ability as an instructor. Many men that have a fine literary style are, nevertheless, complete failures as instructors. The inevitable result of this we can see. Every man that is holding down a chair of philosophy, or that is in any way connected with a department of philosophy, is anxiously attempting or has attempted or has succeeded in writing one or more books. I would in no wise belittle these efforts, for they are in themselves very creditable, but is such a course of procedure fair to the students who are in their

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classes? During the last ten years a great number of philosophical books, about two hundred and fifty per year, have been dumped on the market. How few of them have attained to any popularity! Books—books—books—and still more books until we are to all intents and purposes snowed under by them. What seems to be our greatest need is to make more students of philosophy so that there may be a public to read these books. We need more honest, earnest endeavor among our instructors in philosophy in regard to their actual teaching of the subject. We must get away from the notion that it is only the successful writer who is the successful instructor. Frequently it is just the opposite: it is the successful instructor who is too busy with his students, too conscientious in his treatment of them, for him to have time to write a book. If instructors could be rated for efficiency would we not often find the first last and last first?

To develop this philosophic attitude toward life should be the aim of philosophy. As stated above, philosophy differs from science in that it can furnish no proof for its conclusions; it can give no content to the mind, but it can turn the mind in certain directions—it can inculcate certain view-points which are essential from a philosophic standpoint. This type of mind can be developed in no other way than through philosophic studies—through a critical survey of the very bases of our existence and of our institutions. It is highly important, nay more, it is essential to the man or woman of to-day who must go out into the mart of the world, to have this philosophic view-point, for it is only through this that they can have poise, self-reliance and ability which come from a well-grounded knowledge and a personal interpretation of life. To develop this philosophic view-point, not to instil some system of philosophy or some code of ethics into the mind of the student, should be the aim of every true instructor in philosophy. Given this aim, the teaching of philosophy becomes the noblest of professions. It means to be a conspicuous unit in the great progress of developing rationality, and more than that, it means bringing to the men and women who study under you a sureness of purpose and a tranquillity of mind which nothing else can give.

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BOOK REVIEWS AND NOTES.

RELIGION AND CULTURE. A Critical Survey of Methods of Approach to Religious Phenomena. By *Frederick Schleiter, Ph. D.* New York: Columbia University Press, 1919. Pp. x, 206. Price, $2.00.

It was natural enough, in the halcyon days before the war, to believe in an ever-progressing evolution of life, particularly the life of the human race. Applying this view to the religious beliefs of mankind, two questions had to be answered: the question as to the origin of these beliefs, and the question as to their ultimate transformation. That between these two extremes a sort of pedigree could be established, assigning to each religious phase its place in the procession of cultural history, there seemed to be little doubt, theories of transmission, of "psychic accident," etc., notwithstanding. If the perspective was taken large enough, at least the possibility of such a pedigree apparently had to be admitted, no matter how much dispute might arise regarding its actual shape and ramifications.

It is this sort of apriorism that is finally swept away by Dr. Schleiter's book. "Among all the attempts," he contends (pp. 39f), "which have been made to set forth the genealogical relations alleged to exist among religious practices and ideas, few, indeed, have involved a serious test of the hypothetical scheme by means of concrete historical studies....their relative merit is to be judged largely on the ground of obvious plausibility and ingenuity, and the inner logical consistency and symmetry involved in the process of their own unfolding." Thus he comes to the conclusion (p. 42) that "with strict regard to the actual data, we are justified in considering the fundamental religious ideas of man as lying on the same chronological and logical level, and involving, as it were, so many empirical possibilities which are liable to occur and recur, sporadically. Ideas of magical power, spirits, emanations, deities, an All-Father, etc., are irregularly and willy-nilly distributed among various cultural stages and historical periods and cannot be stated in terms of a necessary genealogical series."

Dr. Schleiter's method of argumentation consists mainly in pointing out the inadequacy of methods hitherto thought fairly reliable. In this respect the comparative method in all its various applications forms the chief object of his attack, tearing, as it does, the phenomena to be investigated from their actual cultural setting, thus basing its conclusions on heterogeneous and, in fact, non-comparable material. The use of the concept of causality as a *fundamentum comparationis* appears to the author particularly vicious, and he devotes three chapters, almost one third of his book, to its elimination in this context. His weapon is the "principle of convergence," applied here for the first time to a philosophical category. Of the striking results obtained the following may serve as an illustration (pp. 175ff):

"The attribution of causal agency to objects or elements....is probably the result of subsidiary reflection—the turning-back of thought upon processes

already in existence. In many cases, activities have been preceded by mental processes characterized by a high degree of emotional tension....In cases of this type....there may arise the tendency or, indeed, the necessity for it to drain off or express itself in overt behavior....Thus, instead of merely kicking a tree or stone in impotent rage at his enemy, which is an immediate dramatized expression of what the primitive man would like to do to him, he proceeds to elaborate and amplify these haphazard acts—he constructs an image and then performs a more or less extensive operation upon it."

It is plain that Dr. Schleiter goes here beyond the observable facts—he is delving into the psychology of the subconscious (cf. especially pp. 161ff). Viewed from another angle, he casts light upon the gropings of the human mind at a stage far more primitive than at present found anywhere on the face of the globe.

Such implications are, of course, apt to vitiate the complete abandonment of the developmental theory of culture origin as found on page 42 (see quotation above), and Dr. Schleiter was probably aware of the fact. At any rate, he cautions us, in the very last paragraph of his book, against drawing just those conclusions which a rigorous interpretation of his views would lead to. "We do not mean," he says, "to attack, indiscriminately and at large, the processes of generalization and abstraction and to contend that the proper study of all cultural phenomena consists in the return to concrete particularity in such a manner as to involve nothing more than descriptive characterizations and a gossipy interest which finds emotional consolation in mere *disjecta membra*...." Instead, he merely wants to counsel "much more critical caution than is customary" in the universalizing of particular aspects of primitive civilization. This advice will have to be heeded, for nobody who has a stake in the field can afford to ignore Dr. Schleiter's book, whether he may like it or not.

X. B. N.

THE IDEA OF IMMORTALITY: ITS DEVELOPMENT AND VALUE. (The Baird Lecture, 1917.) By *George Galloway, D. Phil., D.D.* Edinburgh: T. & T. Clark, 1919. Pp. viii, 234. Price, 9s. net.

Professor Galloway gives a rapid summary of what Herbert Spencer calls the insoluble problem—human immortality. The book is a small one, but ably summarizes the main and familiar lines of argument. Science can supply us neither with valid grounds for rejecting nor sufficient reasons for accepting the doctrine of human immortality. Dr. Galloway's conclusion as to the evidence provided by "psychical research" is *non liquet*. Metaphysics can give no proof of immortality, though Dr. MacTaggart argues that "the Absolute has eternally differentiated itself in finite centers, which neither come into being nor pass away. The human ego is one of these finite differentiations and therefore is eternal and immortal." The trouble is that Dr. MacTaggart does not prove the Absolute must be differentiated in this manner, and if this *were* so, that the human soul *is* one of these differentiations (p. 146). The metaphysicians following Kant emphasize the desire for immortality as its own vindication, and this ethical argument has, with Dr. Galloway, great weight. There remain what are called religious evidences, in especial the Resurrection of Christ. Dr. Galloway, like many modern theologians, holds that the Resurrection, far from proving immortality, requires faith in that doctrine to make it credible. "The

skeptic turns from the evidence unconvinced; the Christian finds it confirms his faith that death is the gateway of life." In conclusion Dr. Galloway sees in immortality, with Mr. Fiske, "a supreme act of faith in the reasonableness of God's work." M. J.

LIFE AFTER DEATH. PROBLEMS OF THE FUTURE LIFE AND ITS NATURE. By *James H. Hyslop, Ph. D., M. D.* London: Kegan Paul, Trench, Trübner & Co., 1919. Pp. xii, 346. Price, 9s. net.

This book is, in part, historical, and historically sound, the first three chapters concerning themselves with the record of primitive conceptions of a future life, and the pre-Christian ideas of civilized nations. After this point, Dr. Hyslop assumes the survival of the spirit of man after bodily death, referring the reader to the "plentiful and voluminous" material in the publications of the various Societies of Psychical Research as evidence, and then attacks the further problems, such as the nature of this existence after death (Chapter IV), the process of communication between this world and discarnate spirits. There is a chapter on the dissociation or disintegration of personality, which is a familiar feature of psychic research; and skeptics may find cause for skepticism in an account of the obsession of Doris by the spirit of Count Cagliostro, who was finally induced to go into a monastery or hospital in charge of Anselm, the eleventh-century Archbishop of Canterbury (p. 303). "Good evidence" of a spirit's personal identity seems somewhat too readily accepted by the author. Dr. Hyslop's attitude throughout is uncompromising: "I regard," he says, "the existence of discarnate spirits as scientifically proved, and I no longer refer to the skeptic as having any right to speak on the subject. Any man who does not accept the existence of discarnate spirits and the proof of it is either ignorant or a moral coward"—an attitude very different from that of the late Lord Rayleigh, when investigating similar phenomena. J.

PAGAN AND CHRISTIAN CREEDS: THEIR ORIGIN AND MEANING. By *Edward Carpenter*. London: G. Allen & Unwin, Ltd., 1920. Pp. 318. Price, 10s. 6d. net.

Mr. Carpenter's thesis is that the Christian religion is not the *merle blanche* among thrushes, though (in this country at any rate) it has managed to persuade the general public of its divine uniqueness to such a degree that few people, even nowadays, realize that it has sprung from just the same root of paganism, and that the evolution of rites and ceremonies has been the same all over the world. "There has been, in fact, a world religion, though with various phrases and branches."

He accounts for the unity of this phenomenon by linking it up with the evolution of human consciousness. It proceeds from and accompanies "the three great stages of the unfolding of consciousness, firstly, that of simple or animal consciousness, secondly, that of *self*-consciousness, and thirdly, that of a third stage" (p. 16) which has not been effectively named: perhaps cosmic consciousness. But the speculations as to this future stage of consciousness are mystical, and on the lines of "wouldn't-it-be-nice-if": "Why should there not arise a sense of non-differentiation in the future, similar but more extended, more intelligent [than the early stage]. *Certainly, this will arrive*, in its own appointed time." J.

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THE ORIGIN OF THE DOCTRINE OF THE TRINITY. By *Rendel Harris*. Manchester: The University Press, 1919. Pp. 41. Price, 2s. 6d. net.

The author gives in this lecture or pamphlet his reasons for supposing, firstly, the existence of a lost book of the first age of Christianity, and secondly, a lost Christian doctrine of the first century, according to which Jesus was defined as the Sophia or Wisdom of God. "What we propose to do," he tells us, "is to show that by the discovery of two fresh facts the whole matter of the evolution of the Trinity is put in a fresh light." This would certainly be the case if the two contentions were facts. In the first of these contentions, Dr. Harris sketches his arguments in a summary and popular manner. He has dealt with this hypothesis elsewhere; but it is unfortunate that he refers to the existence of the Book of Testimonies, which sets out with the idea that Christ was the Wisdom, not the Messiah of God, as a "fact." Against this is to be set the emphasis of St. Paul and the Synoptic Gospels upon Christ as the Messiah.

C. B.

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